

Radio Communication

October 1988



1913

1988

KENWOOD



TS-940S – The most sought-after HF Transceiver in the world

The reviews said it all: – "The receive performance was excellent in all respects, giving clean results with no trace of overloading on the lower bands. The synthesisers were the best that I have ever used; both tuned like analogue VFOs with no trace of steps at low tuning speeds, and clicks were virtually non-existent." That was Peter Hart in *RadCom*.

Chris Lorek, writing in *HRT* said: "Throughout the extensive on-air testing I grew more fond of this transceiver than any other I have operated. I was sorry to see it go. This does not often happen and I think it will be a while before I find a better set of its kind."

Now these chaps see a lot of equipment in their reviewing activities, and don't hand out praise unless it is justified. We get the same enthusiastic comments from the happy owners of the TS-940S, and there is no doubt

that it is still the HF transceiver everyone would like to own one day. It's not just the performance, it's the way every control falls exactly where you want it to be; the way the display tells you exactly the information you want to know; and the relaxed way in which everything works exactly as you would wish it to work.

Don't believe me – just go to your nearest AUTHORISED Kenwood dealer and try the TS-940S for yourself. For a fully descriptive brochure, drop us a stamped addressed envelope and request the TS-940S information. It makes good reading.

TS940S

£1995

LOWE ELECTRONICS LTD.

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone 0629 580800 (4 lines)

Sole Appointed UK Distributor for KENWOOD Amateur Radio

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FRONT COVER

Rt Hon Cecil Parkinson, MP for Hertsmere, with Andrew Keebie, G1XYE 'Young Amateur of the Year' at GB75RS during his visit to HQ to discuss Project YEAR.



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Radio Communication

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Technical articles on subjects of amateur interest are always welcome and should be sent to: The Editor, *Radio Communication*, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE.

All articles received are reviewed for technical merit by the RSGB Technical & Publications Committee, or an acknowledged expert on the subject, before acceptance. Payment at high competitive rates will be made for all articles published.

A contribution will only be considered for publication on the understanding that the person submitting it is the original author and owner of the whole copyright, and that on acceptance for publication such copyright will become the property of the RSGB in consideration of the above-mentioned payment by the RSGB to the contributor.

The editor will be pleased to send intending authors a manuscript preparation guide and to give any other advice and assistance requested.

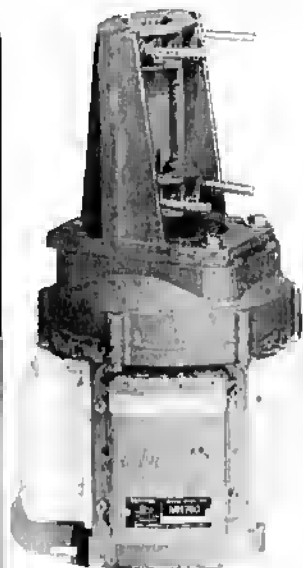
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GREAT BRITAIN 1988

DAIWA Engineering excellence...

DAIWA ROTATORS



Daiwa have always devoted themselves to producing top-quality products for the amateur and professional market, and this dedication is certainly shown in their aerial rotators. The earlier DR-7500 series established a real reputation for accuracy, strength and reliability, but even this has been surpassed by the MR-750 rotators.

The MR-750 satisfies the particular need of the amateur who may start off with a 2 metre beam and requires a smallish rotator. Later on, he adds a 70 centimetre array or a single element HF tribander, and wants something beefier to turn it. Then he goes the whole hog and spends Aunt Agatha's legacy on a TH6DXX, at which time he needs an even bigger rotator. In the past, this poor enthusiast would have bought three separate rotators, but with the MR-750 this is no longer necessary, because you can upgrade the rotator to suit changing circumstances.

The basic MR-750E rotator comes fitted with one motor unit, (even this will give 70kg/cm turning torque, and 60kg/cm

braking). You can then add motors, one at a time up to a maximum installed number of four, each motor adding turning and braking torque until you reach a massive 2800kg/cm turning, and 2100kg/cm braking torque. Thus you can tailor the rotator performance to match your exact requirements.

That's not all; the motor units are self-aligning and self-synchronising, so they can be added without bringing the rotator down the mast (that is, if you have a head for heights), and of course the MR-750 comes with the CR-4 controller which gives you instant readout of aerial direction and fingertip control of aerial rotation. The Daiwa control system guarantees that the direction read out is correct, and is self-correcting at all times.

Rotator end stops are both mechanical and electrical, and the end of rotation can be set anywhere within the 375 degree rotating arc, to suit your own particular requirements.

The Daiwa MR-750 rotators represent the very best in engineering, and come complete with one motor unit, CR-4 controller, and upper mast clamps. Optional lower clamps are available for "top of pole" mounting. Six core control cable is needed, and this is easily made up from two lengths of 3 core mains flex. Motor supply voltage is a safe 24 volts, so you are totally secure when you work on the aerial system.

For full details of the MR-750, or to discuss your particular installation, just ring us at Metlock or visit any of our branches around the country. We are proud to represent Daiwa and we would like to show you why.

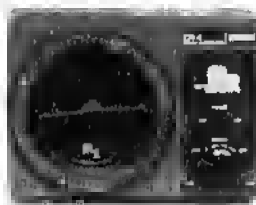
MR-750E (Complete with controller).....£254.00 (carr £8)

Over matter

MR-750PE (additional preset control).....£290.00 (carr £8)

MR-750U (additional motor unit).....£82.17 (carr £3)

LMC (lower mast clamp set).....£17.81 (carr £3)



CN410/460

DAIWA METERS

What's so special about "cross needle" R.F. power metering? Well, it's typically Daiwa to go direct to the heart of the matter and develop a system which will give you the true value of forward power, reflected power, and SWR all at a single glance. The elegant simplicity of the idea hides a great deal of thought, which of course is the hallmark of Daiwa products.

You will see from the photographs that the meter displays have two scales, one reading forward power, the other reflected power. Since SWR is calculated using these two values, Daiwa have arranged the meter points so that SWR is shown at the crossing point of the two meter needles.

Why don't other makers use the idea? Basically it's a question of power meter accuracy. The usual type of single or twin meter "SWR/power meter" uses a simple shunt line to measure the VSWR on the transmission line. You will note that I have said "VSWR", and this is important. These so-called power meters are in fact only measuring the voltage standing wave and in order to display power, you need to monitor both voltage and current in the line. Daiwa meters

do more: at junctions, and at the end of the line, they also measure the power. So-called power meters depend for the accuracy in being terminated in a resistive load, and exhibit wild inaccuracy when terminated in a reactive load. In other words, when the indicated VSWR on the meter is other than 1:1, their accuracy is quite badly affected.



NS-660P

To summarise: the Daiwa cross needle power meters give you easy, unambiguous readings at a glance, and what's more those readings are accurate even in lines displaying high SWR, and since Daiwa meters measure true power, they are accurate at any point in the feedline from transmitter to aerial.

As with all Daiwa products, their meters show the Daiwa approach design, combining accuracy, ease of use and interpretation, and that indelible tool of quality which is the sure sign of a good product. Once owned, never discarded.

CN410M 140-450MHz 150W £65.72

CN460M 140-450MHz 150W £65.40

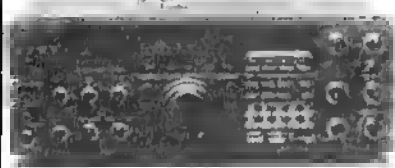
NS660P 1.8-150MHz 1500W £115.00

Note The NS660P measures average power and P.E.P. with a "hold" facility to memorise the actual peak power. Also measures up to 1.5kW forward power.

LOWE ELECTRONICS LTD.

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone 0629 580800 (4 lines)

Sole Appointed UK Distributor for KENWOOD Amateur Radio



TS-940S Top of the range, the TS-940S has everything the discerning HF operator requires. Amateur bands from 160 to 10 metres, together with a general coverage receiver tuning from 150kHz to 30MHz. Operating modes USB, LSB, CW, AM, FM, FSK. Forty memory channels, each effectively a separate VFO. Easy keyboard frequency entry. Leadership in the field. The TS-940S is the transceiver everyone wants to own one day.
TS-940S... £1995.00 (carr. £8)



TM-721E The TM-721E re-defines the concept of the 2 metre/70 cm dual band rig, because it not only puts two transceivers in the same mobile package, but allows cross connection between them in all sorts of ways, such as full duplex, two band simultaneous monitoring, even use as a cross band repeater (for licenced users). 45W on 2, and 35W on 70, make amplifiers unnecessary, and the receiver is simply incredibly good.
TM-721E... £699.00 (carr. £8)

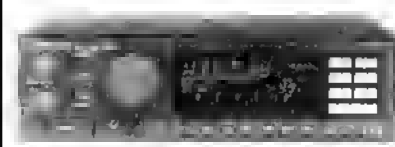


TM-221E The 45 watt wonder for 2 metres. Common sense facilities, ease of use, and a massive 45 watt output make the TM-221E probably the most wanted FM mobile around. All this and an amazing receiver (see Ham Radio Today July 1987). All you need in a compact package, including all channel spacings (5, 10, 12.5, 15, 20, and 25 kHz). P.S. it also has a 70 cm brother, the TM-421E, and a remote controller available for operating them both together.
TM-221E... £317.30 (carr. £8) TM-421E... £352.84

STOP PRESS



TS-790E A new concept in VHF/UHF high performance base stations has just been announced. The TS-790E replaces the much respected 780E, and now gives you three band capability on 2 metres, 70 centimetres, and 23 centimetres - all multi mode, and full of operating features for today's amateur needs. Full details will follow, but you can depend on Kenwood to give you only the best.



TR-751E Versatile 2 metre multi mode mobile or fixed station, the TR-751E again shows that Kenwood magic touch in making a complex transceiver so easy to use. Virtually a miniature version of the TS-711E, the TR-751E set new standards of performance at its introduction, and has continued to win friends ever since, continuing as it did the line started by the TR-9000 and TR-9130. (And, you guessed, it has a 70 cm counterpart, the TR-851E).
TR-751E... £599.00 (carr. £8) TR-851E... £699.00

RZ-1 To be perfectly honest, the RZ-1 came as a surprise to us. We didn't expect Kenwood to come up with a mobile monitor receiver covering 500 kHz to 950 MHz, but here it is. Designed to fit in a standard car radio slot, the RZ-1 seems to have everything. Direct frequency entry, manual tuning, 100 memories, readout of station name on display, scanning, stepping, am/fm modes, unbelievable... Of course this level of facilities does not come cheaply, but the RZ-1 really adds a new dimension to the wide range monitor market.
RZ-1... £495.00

This and That

As part of our constant upgrading of workshop facilities we are awaiting delivery of some new FSAS spectrum analysers from Rohde and Schwarz. Partly to prevent Bill's hair from turning white when he sees the invoice (each FSAS is close to £40,000), and partly because they are now surplus to requirements, the following items of test equipment are available at reasonable prices. First come, first served.

Marconi Instruments TF2370 110MHz digital storage spectrum analyser.
 Hewlett Packard 8558B 1.5 GHz spectrum analyser in 181A storage main frame.

Marconi Instruments TF2015 signal generator with TF2171 synchroniser.
 Texcan 9900 system analyser with return loss bridge. Complete analysis results on 100MHz.

All items in first class order with leads and handbooks. (The TF2370 is like new).
 Contact John Thorpe here at Matlock for details and price.

And our branches at:
Glasgow, 4/5 Queen Margaret Rd., (off Queen Margaret Drive). Tel. 041 946 2626.
Darlington, 56 North Road. Tel. 0325 486121.
Cambridge, 162 High St., Chesterton. Tel. 0223 311230.
Cardiff, South Wales Carpets, Clifton St., Tel. 0222 464164.
London, 223 Field End Rd., Eastcote, Middx. Tel. 01 429 3256.
Bournemouth, 27 Gillam Rd., Northbourne. Tel. 0202 577760.
 Branches are normally open from Tuesday to Saturday inclusive, with lunch breaks to suit local conditions. If in doubt, just ring us at Matlock.

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Chesterfield Road, Matlock, Derbyshire DE4 5LE
 Telephone 0629 580800 (4 lines)

Name
 Address

Post Code
FREE INFO.
 Don't forget £1
 to cover postage
 R.C.

ICOM

NEW! IC-228E 2 Meter FM Transceiver



Actual
size

Features:

- Multicolour Liquid Crystal Display.
- 25 Watt output.
- 20 Memory channels.
- Scanning.
- Call and priority function.
- Compact size.
- HM15 microphone supplied.

Take a close look at this easy to use and compact VHF Mobile Transceiver. It's unique orange, red and green LCD highlights the numbers and letters for easy viewing. With a 25 watt output from a custom designed power module and a extra large heatsink, this transceiver does not get too hot under your dashboard.

Each of the 20 memory channels can store frequency, offset and direction, in fact all the information to work simplex or a repeater. The memory scan function will scan the memory channels and with the skip

function miss those you choose. The program scan will scan all frequencies between two programmable limits. The call channel ensures that your favourite frequency is within easy reach, and with the priority watch the call channel or memory channels can be monitored every five seconds.

This transceiver provides you with so many features, its small compact size and simple front panel design make it a superb mobile transceiver. See the IC-228E or the IC-228H 45 watt high power version at your local ICOM dealer.

Icom (UK) Ltd.

Dept RC, Sea Street, Herne Bay, Kent CT6 8LD. Tel: 0227 363859. 24 Hour.

Count on us!

DUAL BAND

NEW! IC-3210E Dual Band FM Mobile



If you are newly licensed or just undecided about which band to operate first, then the new ICOM IC-3210 is just the answer. This dual band FM transceiver is ideally suited for the mobile operator. Transmit on one frequency and receive on the other and you're operating full duplex. It's just like talking on the telephone.

The simple and well laid-out front panel ensures quick and easy operation of all its many functions. A great convenience when driving. Optional accessories available are the UT40 tone squelch board, HS15 + SB mobile microphone and switch box, SP8 external speaker and PS45 AC power supply.

Features

- Full crossband duplex.
- 20 double-spaced memory channels.
- built-in duplexer.
- 2 call channels.
- 4 priority watch functions.
- Programmed memory and selected band memory scan.
- Variable LCD backlight intensity.
- Tone squelch and pocket beep functions (optional)
- 25 watts output.

Helpline: Telephone us free-of-charge on 0800 521145. Mon-Fri 09.00-13.00 and 14.00-17.30. This service is strictly for obtaining information about or ordering Icom equipment. We regret this cannot be used by dealers or for repair enquiries and parts orders, thank you.

Datapost: Despatch on same day whenever possible.

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ARE COMMUNICATIONS

STANDARD C500 DUAL BAND HANDIE



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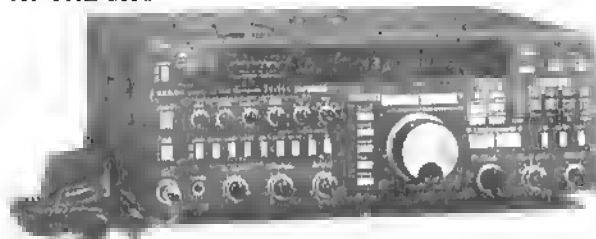
SPECIAL LEICESTER EXHIBITION PRICE: £349

YAESU FT736R QUAD BAND MULTIMODE

The King of UHF/VHF base stations, the FT736R has all the facilities any discerning user may need, plus the two most important features: uncompromised receive performance and a clean transmitted signal.

ARE's continued policy of direct importing guarantees you an unbeatable price including excellent part-exchange deals.

SPECIAL LEICESTER EXHIBITION PRICE: ASK AT THE SHOW



YAESU FT747GX "ECONOMY" HF TRANSCIVER

An HF transceiver with built-in general coverage receiver. All mode, including FM as an option, for less than the price of a 2m multimode!

Offered without am or cw filters at a super discounted price of £579



YAESU FT767GX HF + 2m + 6m + 70cms

Despite being YAESU's most expensive transceiver for HF operation, it continues to outsell all other HF equipment marketed by A.R.E. All band, all mode, built-in automatic tuning unit, power supply, general coverage receiver, digital power/SWR meter, full 100w output, optional 2m/6m/70cms modules, which just plug in.



SPECIAL LEICESTER EXHIBITION PRICE: £1,369 including MH11BB scanning mic.

Also available with one or all VHF modules fitted at a discounted price.

ICOM IC32E DUAL BAND HANDIE

Direct competition to the STANDARD C500, the ICOM IC32E offers excellent facilities utilising all existing ICOM accessories. Ideal for the IC2E/O2E owner. Similar specification to the C500.

SPECIAL LEICESTER EXHIBITION PRICE: £369



ARE
Tel: 01-997 4476

KENWOOD TS790G TRIPLE BAND MULTIMODE BASE STATION

At last KENWOOD have updated the long-standing TS780S. The latest addition to the KENWOOD product range, the TS790G offers an excellent specification over the 2m/70cms/23cms amateur band. The new TS790G is simple in operation, but offers excellent performance for the VHF user. Operating on 12 volts DC, it is available with the matching PS31 power supply and SP31 speaker. Viewing for the first time can be made at the LEICESTER EXHIBITION.

**SPECIAL LEICESTER
EXHIBITION PRICE:
WAIT AND SEE!!**

KENWOOD TS680S/140S HF TRANSCEIVERS

Available with or without 6 metres, the TS680/40 is an ideal upgrade from your dusty FT101ZD!

**SPECIAL LEICESTER EXHIBITION PRICE: TS680S £879
- TS140S £799**



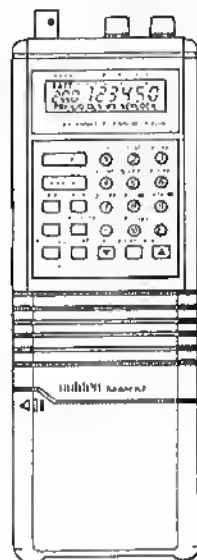
KENWOOD TS440S HF TRANSCEIVER

Quickly becoming a major seller in the A.R.E. product range, the TS440S offers 100w output between 1.8 and 10m. FM is fitted as standard. Auto tuning unit is optional extra.



**SPECIAL LEICESTER
EXHIBITION PRICE:
£1,029 or with antenna
tuning unit £1,189**

UNIDEN/BEARCAT BC200XLT SCANNER



A purpose built handheld scanner, the new BEARCAT BC200XLT offers frequency coverage and specification previously unavailable.

Frequency range 66 - 88MHz;
118 - 174MHz; 406 - 512MHz;
806 - 956MHz (Cellular Band).

200 fully programmable channels, auto am/fm selecting makes the BEARCAT 200 an instant success.

**SPECIAL LEICESTER
EXHIBITION PRICE: £219**
including nicad pack, mains
charger & free VHF/UHF
Frequency Guide.

JRC JST135 HF TRANSCEIVER

The latest offering from the Japan Radio Co., the JST135 is available for the radio amateur who appreciates quality engineering. Imported direct, bypassing any European distributor.

A.R.E. COMMUNICATIONS continue to offer this excellent transceiver at an unbeatable price. Visit our stand at the LEICESTER SHOW for details.



Opening hours Monday - Friday 9.30-5.30. Saturday by appointment.

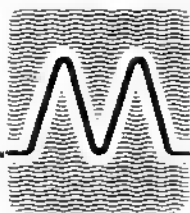
A MESSAGE FROM THE GUV'NOR
products, including famous brand names such as YAESU and KENWOOD, at far better prices than those offered to you by the European distribution networks.
Our continued policy of direct importing will always guarantee you better prices. You may also have noticed that our product range is increasing - this is largely due to the tremendous support we get from our customers. Remember, the more you purchase, the more we can purchase and the better prices will be. Come along to our stand at the LEICESTER EXHIBITION where myself, Brenda, Martin and Brian will give you a warm welcome - and unbelievable discounts!"
"We are often referred to by the 'official' UK Distributors as 'Grey Importers'. Perhaps a change of colour would be appropriate - may I suggest GOLD - because our massive savings in purchase price, which we pass on to you, puts GOLD back into your pockets. We are cutting out the UK middle-man by importing direct from our agents in JAPAN, (who are usually found NIPPING AROUND TOKYO IN HONDAS, RATHER THAN SWANNING AROUND IN AEROPLANES, MERCEDES OR ROLLS ROYCES). Both Brenda and myself spend the majority of our time contacting agents throughout the world securing supplies of Japanese

73 Bernie G4AOG



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MICROWAVE MODULES LIMITED

THE COMPANY...

MICROWAVE MODULES LIMITED is a British manufacturing Company, established over 18 years ago, and currently employs over 40 staff in its two modern factories. The Company currently manufactures on an annual basis more than £1,000,000 of radio equipment, all of which has been designed and manufactured in the UK.

AND ITS PRODUCTS...

The Company offers what is probably the widest range of amplifiers and transverters available from any single manufacturer. The range of amplifiers and transverters is listed below, together with the other popular items manufactured by the Company such as preamplifiers, converters and amateur TV equipment.



MML432/100



MML432/30 L

CATALOGUE... A copy of our latest catalogue is available free of charge upon request.

AVAILABILITY... Our products are normally ex-stock, from ourselves or our dealers.

GUARANTEE... All products are fully guaranteed for 12 months.

PRICE LIST

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MML144/50-8	2m 50W Linear, 10W input	107.00	B	MMT70/144	2m to 4m Transverter	149.00	B
MML144/100-S	2m 100W Linear, 10W input	149.00	C	MMT144/28-R	2m Linear Transverter, 25W o/p	295.00	B
MML144/100-HS	2m 100W Linear, 25W input	159.00	C	MMT144/28	2m Linear Transverter, 10W o/p	149.00	B
MML144/100-LS	2m 100W Linear, 1 or 3W input	169.00	C	MMT432/28-S	70cm Linear Transverter	199.00	B
MML144/200-S	2m 200W Linear, 3 to 15W input	379.00	D				
MML432/30-L	70cm 30W Linear, 1 or 3W input	189.00	C	MMK1691/137.5	1690 MHz WX Satellite Converter	169.00	B
MML432/50	70cm 50W Linear, 10W input	155.00	C				
MML432/100	70cm 100W Linear, 10W input	389.00	D	MMG1691	1690 MHz GaAsFET Preamp	129.00	B
MMC435/600	70cm ATV Converter, UHF output	38.00	A	MMR3/25	3 dB 25 Watt Attenuator	19.00	A
MTV435	70cm ATC 20W Transmitter	215.00	B	MMR7/3	7 db 3 Watt Attenuator	19.00	A
				MMR15/10	15 db 10 Watt Attenuator	19.00	A
MMT50/28-S	10m to 6m Transverter	295.00	B				
MMT50/144	2m to 6m Transverter	295.00	B				

Postage/Packing Charges (inc VAT): A = £2.00; B = £5.00; C = £6.00; D = £8.00



WELCOME

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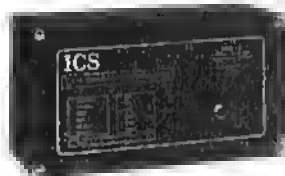
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MONDAY-FRIDAY
9-12.30, 1-5.00
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ICS

Leaders in Data and Image Transmission over Radio

Here is ICS's outstanding product line up for the Autumn. We are especially excited about our new high resolution image transmission software/hardware system for the Amiga computer. The clarity of its grey scale representation of press photographs and satellite cloud cover images has to be seen to be believed. By the time this advertisement appears, we also hope to have full colour SSTV software for the Amiga. Low cost video camera interfaces are available which will allow your own images to be transmitted by SSTV or grey scale facsimile from the Amiga.

TOR-1



- ★ Ruggedised, water resistant construction
 - ★ Only 80 mA current requirement at 12/24 volts
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 - ★ EAPROM configuration memory
 - ★ User friendly host mode IBM-PC software support with on screen status
- Only £499.95 including VAT plus £5.00 post and packing

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- ★ More PK-232s sold world wide than any other multi-mode controller
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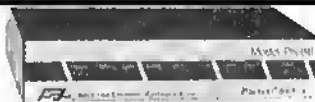
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 - ★ Mouse driven
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 - ★ This is quite the best piece of amateur radio image transmission software we have ever seen. Has to be seen to be believed!
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PRICE LIST

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We have recently moved to larger premises, so please note our new telephone number

Product Code	Description	Price (inc VAT)	P&P (UK)
PK-88	Budget Packet Radio TNC	£109.95	£2.50
PK-232	7 mode Intelligent Terminal Unit	£269.95	4.00
HRI	144 Mhz Handheld Antenna	£14.95	1.00
HR3	150 Mhz Marine Handheld Antenna	£14.95	1.00
HR4	440 Mhz Handheld Antenna	£14.95	1.00
ISOPOL 144	2 Metre Base Station Vertical Antenna	£39.95	3.00
ISOPOL 440	70 cms Base Station Vertical Antenna	£59.95	3.00
PC-PAKRATT	IBM-PC Software for the PK-232	£19.95	£2.50
PK-FAX	IBM-PC Facsimile Software for the PK-232	£19.95	£2.50
COMM-PAKRATT	Commodore 64/128 Software for the PK-232	£59.95	£1.50
COMM-FAX	Commodore 64/128 Fax software for PK-232	£59.95	£1.50
COMM-FAX/CT	As above, cartridge only	£39.00	£1.50
PK-232/BBC	BBC Software for the PK-232	£26.95	£1.50
PK-88/CBM	Commodore Software for the PK-87	£59.95	£1.50
PK-88/BBC	BBC Software for the PK-87	£26.95	£1.50
AMIGA-FAX	Grey scale Tx/Rx Fax software for AMIGA	£99.95	£2.50
FAX OPTION	Manual, Cable, ROM for PK-232	£49.95	£2.00
NEW FIRMWARE	Upgrade for PK-232	£15.00	£1.50
FAX-1	Weather Map/RTTY/Navtex Decoder	£279.95	£4.00
ANT-1	Active Antennas, 2 Outputs, 70 KHz 25MHz	£75.00	£3.50
FAX-1/N	As above, but with internal Navtex Receiver	£399.95	£5.00
ANT-1/N	Active Antenna for Navtex Reception	£69.00	£3.50
OCP-1	12v Printer, roll Holder, Bulkhead mfg. Plate	£229.95	£3.50
MARINEPACK	FAX-1 and OCP-1	£499.95	£9.50
NAVTEX	Navtex Receiver Option for MARINEPACK	£120.00	£0.00
FAXPACK	FAX-1, SC-1200, AC Power Supply, Leads, Paper	£399.95	£9.50
TOR-1	Error Correcting Telex Terminal Unit	£499.95	£5.00
TOR-COM	IBM-PC Compatible Software for TOR-1	£129.95	£2.50
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SC-5500	180 cps 132 Column Printer, With NLO	£229.94	£9.50

PK-88



- ★ Replacement for the already well known PK-87
 - ★ Currently the best value Packet TNC on the UK market
 - ★ Compact size and attractive appearance
 - ★ Host mode ★ Full front panel status display ★ 32K RAM
 - ★ Superb documentation ★ Built in personal mailbox and HF modem
 - ★ The ideal second unit for existing PK-232 users who want a compatible product which they can instantly understand
- Only £109.95 inc VAT plus £2.50 post and packing

FAX-1



- ★ Demodulates Weather Facsimile, RTTY and Navtex
 - ★ Superb image definition
 - ★ Plugs into the extension speaker output of any SSB receiver and drives any Epson FX-80 or NEC P6 compatible printer
 - ★ Built in timer ★ Fully automatic ★ All leads supplied
 - ★ No computer knowledge required
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- ★ 25 watts output. ("HE" model 45 watts)
- ★ 21 memories & 2 "call" channels.
- ★ Programmable Scanning & Priority channel
- ★ 12.5kHz & 25kHz steps.
- ★ Includes microphone & mobile mount.
- ★ Bright LCD display
- ★ Reverse repeater etc.

Designed for optimum performance combined with small size, the ALINCO ALR-22E reaches new heights in both technical performance and value for money. We've managed to keep the price down to a level that cannot be matched by any other manufacturer although we believe that a small increase will shortly be made to the price. What better time therefore, than now to purchase one of these super rigs. You won't see prices like this again! Technically it's superb and inside it looks very much like some of its more expensive competitors! Measuring only 5.5" x 6.5" it will fit into most places and if you ask, we will extend the frequency range to cover 140-170MHz on receive. We could bore you with the specification but frankly it's just the same as all the others (apart from the price of course). We could tell you about all the various features it has, but again it's not much different from the competition. Let's be honest, apart from being some £100 cheaper than some of its competitors and having an extended receiver coverage, it really is like most other rigs. So if money is no object and you only want 144-146MHz coverage, you probably won't be interested in the ALR-22E. If on the other hand these things are important to you, why not send for the full colour brochure today.

2m FM Mobile ALR-22E



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- ★ 2M FM 144-146MHz
- ★ RX 140-170MHz!
- ★ 3 Watts output
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- ★ 10 memories
- ★ LCD Readout
- ★ S-meter
- ★ Tone Burst
- ★ Priority
- ★ 12.5KHz steps
- ★ 12v DC operation!

Another winner from ALINCO. A true handy transceiver with no extras to buy! Unlike its competitors, you get the nicad pack (500mAh) AC charger, and provisions for direct 12v DC charge. Measuring 168 x 61 x 30mm it's a beauty! Optional accessories include speaker-mic, mobile bracket and high power packs. Get the facts today!

DJ-100E 2M FM

NEW

Available
September



SEE PAGE
26 FOR
REVIEW

ALD-24E 2m/70cm Dual Band FM
See colour photo on
front cover



£449

- ★ 2m/70cm. Full duplex operation.
- ★ 25 watts FM on both bands.
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- ★ Programmable scanning and priority.
- ★ 12.5KHz & 25KHz steps.
- ★ Includes all hardware & microphone.
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- ★ 12 months warranty parts & labour.

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DC1 DC leads for mobiles	5.95
DC2 DC lead for amps	4.50

NEW DUAL BAND HANDHELD!

The new ALINCO DJ-500E will shortly be available covering 2m & 70cm with full duplex. Features include 10 memories on each band and programmable offsets. Receive frequency can be extended from 130-169 & 420-469MHz approx. Measuring 53 x 170 x 80 mm it's pretty compact. As usual all the standard accessories are supplied at the basic price. Watch for our super opening price!

ALINCO DJ-500E 2M/70 cm

- ★ 2m/70cm Coverage
- ★ Full duplex
- ★ Extended Rx ranges
- ★ Programmable Memo
- ★ Scanning
- ★ Keyboard Entry
- ★ Compact size
- ★ No extras
- ★ Price? T.B.A.



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FT-4700RH TRUNK MOUNTABLE HIGH POWER DUAL BAND VHF/UHF FM TRANSCEIVER



The Trunk-Mountable FT-4700RH is a high power FM dual band mobile/base transceiver providing 50 watts of power output on the 2m amateur band, and 40 watts of power output on the 70cm amateur band. 5 watts low power is also selectable on both bands.

True full-duplex crossband operation, originated by Yaesu for amateur radio in the FT-2700RH, is carried forward in the FT-4700RH, but with a whole new look and features. The front panel can be detached from the main body of the transceiver, which can then be installed under a seat or safely hidden in the trunk, using the YSK-4700 controller

cable option to connect to the front panel/controller, mounted conveniently on the dashboard.

On the control panel, the bright amber-backlit LCD shows both VHF and UHF frequencies and signal strengths, and all controls have backlit labels for clear visibility, with a dimmer switch to keep viewing comfortable even in total darkness.

Dual receive is provided with independent squelch and mixing balance, so you can listen for calls on either band while working someone on the other. All of the latest tuning/scanning

features are included, such as operator selection of six tuning steps, one-touch recall CALL channel, selective memory scanning with auto-resume after carrier drop or 5-second pause, and priority channel monitoring.

Twenty memories, ten for each band, are provided for storing independent transmit and receive frequencies and subaudible tone functions (if the FTS-8 Tone Squelch Option is installed). Other options include the SP55 External Loudspeaker FP-700 AC Power Supply for base station operation, and a wide assortment of special purpose microphones.

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FTS-8	CTCSS Tone Squelch Unit	£45.00	MH-1B8	Hand Scanning Microphone	£21.00
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FT736R RRP £1450 c/w 2m & 70cms

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The FT-747GX is a compact SSB/CW/AM and (optionally) FM transceiver providing 100 watts of PEP output on all hf amateur bands, and general coverage reception continuously from 100kHz to 30MHz. A front panel mounted loudspeaker and clear, unobstructed display and control layout make this set a real joy to use. Convenient features include operator selectable coarse and fine tuning steps optimized for each mode, dual (A/B) vfos, along with twenty memory channels which store mode and skip-scan status for auto resume scanning of selectable memories. Eighteen of the memories can also store independent transmit and receive frequencies for easy recall of split-frequency operations. Wideband (6kHz) AM and narrowband (500Hz) CW IF filters are included as standard, along with a clarifier, switchable 20dB receiver attenuator and noise blanker. User programming for more advanced control by an external computer is possible through the CAT (Computer Aided Transceiver) System. The transmitter power amplifier is enclosed in its own diecast aluminium heat-sink chamber inside the transceiver, with forced-air cooling by an internal fan allowing full power FM and packet, RTTY, SSTV and AMTOR operation when used with a heavy duty power supply.

- ★ 160-10M HF Transceiver
- ★ General Coverage Receiver
- ★ All Mode (FM optional)
- ★ 0-100W output (25W AM carr.)
- ★ CW Narrow (500Hz) Standard
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- ★ Large Clear LCD Display
- ★ Simple operation (See pic below)



All major controls are grouped together for convenience and ease of operation

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FT747GX HF TRANSCEIVER RRP £659.00 inc VAT

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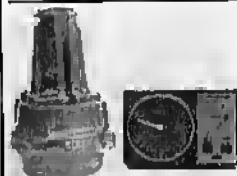
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Project YEAR

This month's front cover shows the Rt Hon Cecil Parkinson, MP for Hertsmere, HQ's local MP, enjoying his first experience of amateur radio, at GB75HQ, under the capable operating of Andrew Keeble, G1XYE. Since Andrew won the DTI prize as Young Amateur of the Year he has become quite a celebrity.

After introducing Mr Parkinson to amateur radio – and letting him try it out for himself – Society officials joined him in a discussion on Project YEAR. Gaining Government support for such an ambitious plan is important to its success. One of the next moves will be to co-operate with the Government to arrange an industry conference to which the major UK electronics companies will be invited.

Two final points on Project YEAR this month. Firstly, in this issue of *Rad Com*, John Case, GW4HWR, the Chairman of the Society's Training and Education Group, discusses some training and examination aspects of the projected Student Licence.

Secondly, though the Project YEAR consultative document in the September issue of *Rad Com* was delayed by the postal strike, we hope that, by now, you have responded.

... and the postal strike

I write this as the postal strike enters its second week, not knowing when the October issue of *Rad Com* will be posted. The Society's HQ has been without post for a week and the September issue of *Rad Com*, though presented to the Post Office, has not yet reached our members. Clearly every individual, organisation and company in the UK is inconvenienced to some extent.

In the case of the RSGB, the strike has already caused some problems which will take additional and unexpected effort to resolve, probably at some considerable cost. Many subscription payments and book orders have been delayed which has disturbed the Society's cashflow. The normal high level of queries by post has stopped, but other means of communication are buzzing. Thank goodness we had an adequate supply of paper for the fax machine! The strike has also hit the 1989 Council Elections; a matter which Council will keep under review if the strike continues. The weekly GB2RS news transmissions are also affected since the scripts are normally distributed by post.

When you read this the strike will be over, but please be patient. Undoubtedly the strike will be followed by a massive mailbag which staff will obviously clear as quickly as possible. In a world of high technology communication, involving satellites and microwave links, it is perhaps surprising to realise just how much we rely on the humble letter, delivered by hand, through the mailbox!

David Evans, G3OUF

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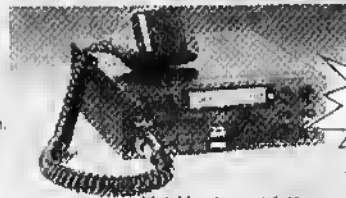
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NEWS

BULLETIN

THE NEW AMATEUR LICENCE:

28-29.7 MHz Equipment Prohibition - The Facts and Packet Radio Now Legal

We've received some letters recently in which we've been taken to task for letting an apparently lethal clause in the new licence through without seeming to have taken it up with the DTI. It's all to do with Note (aa), which you'll find at the end of the new licence text given in the August Bulletin. This contained an alarming-sounding prohibition on the import, manufacture or assembly of equipment operating only in the 28-29.7 MHz band. Note the "only" - some of those who wrote us the stroppiest letters didn't.... In fact, this RELAXES a restriction which has been there since 1968.

Basically, several members have asked us a) what it all means b) why it's in the licence and c) why the blazes we apparently didn't fight tooth-and-nail to have it taken out. Well, folks, first of all it basically isn't part of the licence; it was included for information. The relevant legislation is the Wireless Telegraphy (Citizens Band and Amateur Apparatus) (Various Provisions) Order 1988 - it's an example of something called a Statutory Instrument - and its sole reason for existing is to ban the illegal CB radio trade. Let's make that perfectly clear by spelling it out again - THE ONLY REASON FOR IT IS TO BAN THE ILLEGAL CB TRADE. It has NOTHING to do with amateur radio except by accident - and indeed the restrictions have a far greater effect on CB users than on radio amateurs.

In a nutshell, the legislation makes it illegal to import, manufacture, sell or use equipment which can transmit speech in the band 26.1-28 MHz unless it is type-approved CB gear. In this context "manufacture" includes

home-brewing and conversion from another band. It is only illegal to import or manufacture single-band equipment for 28-29.7 MHz. What the DTI said in its press release was that "The widespread sale of unapproved apparatus has led to interference to authorised radio services, including, most seriously, to emergency services. The introduction of these measures will ensure that unapproved equipment is removed from the market".

"Fie", we hear you say, "so what's that got to do with amateur radio?". Well, the legislation mentioned above actually relates to equipment which can be used in for transmitting in the frequency band between 26.1 and 29.7 MHz for the purpose of import and manufacture. The reason for extending it to cover frequencies above 28 MHz is that the DTI felt that this was necessary to remove the possibility of people getting round the legislation by importing single-band amateur gear and then modifying it. Note again the reference to "single-band" - multiband rigs are now excluded from the controls previously applied.

So this leaves single-band 28 MHz rigs as the ONLY amateur radio equipment covered by the order. When the subject cropped up, the Society objected strongly to the inclusion of the 28 MHz band in the order on the basis that it had nothing to do with radio amateurs. We held a number of meetings with the DTI on this topic, but we were not able to persuade them to come up with any other acceptable restrictions or conditions. However, we were told that a blanket restriction was necessary. Anyway, we did negotiate a

compromise to make life easier for bona-fide amateurs. What this means in practice is that the DTI has made provision for the bona-fide import, assembly, manufacture or conversion of single-band amateur equipment and even the conversion of CB gear on to the 28 MHz band. All you need to do - as it says in Note (aa) - is to write to the DTI, Radio Investigation Service, Room 102, Waterloo Bridge House, Waterloo Road, London SE1 8UA and ask for an "Authority" for single-band amateur radio gear on 28 MHz. We are assured that such an "Authority" is readily available to bona-fide radio amateurs. Incidentally, we ought to spell out that it isn't at all illegal to use single-band 28 MHz equipment without an "Authority" - but you must have one before you modify any.

If in doubt, drop a line to the DTI or ourselves and we'll try and sort out any problems. For those members who have sent us letters containing questions on this topic, the situation is that we are doing what we said we'd do with queries of this type - they've all been collated and sent to the DTI with a request for some answers. When we receive their reply we'll publish it here for all to see.

It is most regrettable that as of now home-brewing for 28 MHz only will need "authority". We don't like it either, but the DTI regards it as a necessary price to pay to ensure that illegal CB gets trodden on hard. Blame the illegal CB fraternity for the inconvenience this will cause, not us - and remember, it's only a case of writing one letter to get the authority.

(Packet Radio Now Legal - over)

(continued from previous page)

PACKET RADIO NOW LEGAL....

You'll be fascinated to know that packet radio is now legal. For the past couple of years the position of packet has been a trifle unusual insofar as - strictly speaking - it was outside the terms of the licence. However, there was little danger of the RIS coming round and dropping a 16-ton weight on your TNC; the RSGB and the DTI agreed at an early stage that packet was a Good Thing. So there hasn't exactly been a lot of pressure on packet operators to cease and desist whilst the fine details of the complicated legislation package were worked out. There HAS been a lot of criticism of the Society in regard to one particular area, however, and we'll deal with that in a moment. A good deal of the aggro has arisen because we have tried to introduce these facilities in advance of the new licence in order to speed up the licensing of mailboxes.

Anyhow, at long last most of the things which packet ops take for granted - third-party traffic, unattended operation and so on - have been written into the licence and the new legislation will take effect from 30 September 1988. The wording of the new material is similar to (although not identical to) that of the revised licence which comes into effect on 1 January 1989. In addition, the position of mailboxes has been clarified. At present a mailbox licence application has to go through the DTI's site and frequency clearance procedure - which can be tedious. The new procedure that's been agreed with the Department goes like this. The RSGB, acting as the DTI's agents, will distribute "Notices of Variation" on request. These will alter the terms of an individual's licence and will permit him or her to operate a mailbox on spot frequencies in the 50 and 144 MHz bands, together with linking to other mailboxes on these bands and on 1298 MHz. The procedure for issuing these Notices will take a few days - as opposed to the few months which applying via the usual channels would have taken. Callsigns (for mailbox use only) will be in the GE7 + 3-letter series. Mailbox NoV application forms are obtainable from RSGB Headquarters.

Now we come to the bit that seems to have upset half the packet operators in the UK. Let's have a look at why the 430 MHz band (apart from 200 kHz of it in the satellite

bit, which is no use whatsoever for packet) does not appear in the list of bands available for unattended digital communications or mailbox linking, though it's easily the most suitable for the job - as the RSGB, no less, pointed out in its paper on the subject to the 1987 IARU Region 1 Conference. At the time we finished negotiations with the DTI, the 430 MHz band WAS included in the list of bands in which unattended digital facilities could be used. However, just as the presses were about to roll, the DTI informed us that the primary user of 430 MHz in the UK - the Ministry of Defence - had objected to it. Note that MoD even objected to milliwatt remote control on the band as well.

At that stage we had had absolutely no chance to respond to this and it had to go in. You may, however, rest assured that the Society is in the throes of taking up this matter as this is being written.

Here's the text of the changes in full.

"The Secretary of State gives notice pursuant to section 1(4) of the Wireless Telegraphy Act 1949 to those who are licensed under an Amateur Radio Licence (A) or (B) which has been issued and remains in force of the following variations to Licence (A) and (B):

1. Sub-clause 1(1)(b)(iii) shall be deleted and replaced with the following:

(iii) digital communications (which include data, radio teletype (RTTY) and amateur teleprinting over radio (AMTOR)

2. The following sub-clause (b1) shall be added after sub-clause 1(2)(b):

(b1) If the Station is used for Unattended Operations by digital communications, then the Station shall be used only at the main address or an alternative premises:

1) in the frequency band 50-51 MHz, with a power not exceeding 10 dBW erp carrier or pep, or

ii) in the frequency bands including and above 144 MHz specified in the Schedule hereto (except the sub-bands 435 - 436.6 MHz, 436.8 - 438 MHz, 10250 - 10270 MHz and 10300 - 10400 MHz and the bands 430 - 435 MHz, 438 -

440 MHz, 1240 - 1325 MHz and 24050 - 24250 MHz), with a power not exceeding 14 dBW carrier or pep.

3. The following words shall be added after the word "personally" in sub-clause 1(2)(c)(1):

"except in the case of Unattended Operations by digital communications".

4. The following sub-clause 1(2)(f) shall be added after sub-clause 1(2)(e):

(f) The Licensee shall not transmit such material as music, public broadcasts or speeches.

5. In sub-clause 6(1), the words from "An indelible" to "the following" shall be deleted and the following words substituted:

"The Licensee shall keep a permanent record (the "Log") showing:"

6. In sub-clause 6(1)(c), the following words shall be added after the word "sent":

"(not including those stations which form part of the intermediate relay of messages)"

7. Sub-clause 6(1)(f) shall be deleted.

8. The following sub-clauses (4) and (5) shall be added after sub-clause 6(3):

(4) When the Station is set up for use or is being used for automatic operations involving digital communications, sub-clause (1)(c) above shall not apply (although the specific frequency and class of emission shall be recorded)

(5) The Log shall be maintained in a book or on a magnetic tape or disc and where the Log is maintained:

(a) in a book, the book shall not be loose-leaf and no gaps shall be left between the entries;

(b) on a magnetic tape or disc, the tape or disc shall be used only to keep the Log.

9. Clause 8 shall be deleted and replaced with the following:

(8) Recorded or Retransmitted Messages and Signals

(1) The Licensee may record and retransmit messages addressed to the Station from other licensed amateur stations:

(a) with which the Licensee is in direct communication: or

(b) which are intended for retransmission to a specified licensed amateur station

(2) When recording and retransmitting the message of another licensed amateur station, in the Licensee also records and retransmits the call sign of the licensed amateur, then the Licensee shall transmit the call sign in such a way that the origin of the message and the origin of the retransmission are clear

(3) The Licensee may send messages by (or as part of) the intermediate relaying of the messages to or from other licensed amateur stations

(4) When operating under sub-clauses 8(1)(b) or (3), the Licensee is not responsible for the content of messages sent by digital communications which did not originate at the Station when he could not reasonably be expected to review their content (and did not review their content) before relaying them

(5) Notwithstanding sub-clauses 8(1) and (3) the Licensee shall not operate:

(a) a mailbox or bulletin board (each being a facility which receives and stores messages for or on behalf of other licensed amateur stations for retransmission at a later time on the request of (and to) the intended recipient of the message; or

(b) a telephony repeater (a facility which

receives and simultaneously retransmits messages by telephony for or on behalf of other amateur stations).

10. Sub-clause 9(2) shall be deleted and replaced with the following:

(2) The callsign shall be sent:

(a) during initial calls (CQ calls);

(b) at the beginning and at the end of each period of communication with a licensed amateur station and, when the period of communication is longer than 15 minutes, at the end of each interval of 15 minutes;

(c) at the beginning of transmission on a new frequency (whenever the frequency of transmission is changed);

(d) by the same type of transmission that is being used for the communication;

(e) on the same carrier frequency that is being used for the communication; and

(f) by morse telegraphy or telephony at the end of each 30 minute period during which transmissions are sent from the Station (unless the Licensee is already transmitting in morse telegraphy or telephony).

11. The following sub-clause (vii) shall be added after sub-clause 16(1)(a)(vi):

(vii) "Unattended Operation" means the operation of the Station when unattended by the Licensee.

NOTE:

So-called "Personal Mailboxes" which are used solely for the licensee's own messages, are not Mailboxes as defined in the licence. Therefore they do not need a notice of variation.

NEWS FROM WATERLOO BRIDGE HOUSE:

Some confusion has apparently arisen over the new "Record of Achievements" issued by City & Guilds, which has replaced the old pass slip. All successful candidates, in either part of the examination, will receive a document headed "This Record of Achievements towards..." underneath there will be a computer-printed wording "The Radio Amateur's Examination Certificate". The Record of Achievements will make no mention of assessments where candidates have failed or from which they were absent. Candidates will only receive a Radio Amateur's Examination Certificate when they successfully complete all the required assessment components. WEH has said that;

"....The Department would like to make it clear that despite the similarity of the two documents the Record of Achievements is NOT the Radio Amateur's Examination Certificate. From 1 January 1989 the New Amateur Radio Licence will permit operation of a licensed amateur's station under supervision; this will not apply to someone who holds ONLY a Record of Achievements. The Radio Amateur Licensing Unit in Chesterfield, which issues Amateur Radio Licences on the Department's behalf, has also asked us to emphasise that only the Record of Achievements (which records success in both parts of the exam) should be sent with the licence application. A photocopy should not be sent. The Certificate should only be sent if the Record of Achievements has been lost".

Finally, the DTI has said that it is prepared to offer some special facilities to the Radio Amateur Invalid & Blind Club, with a view to allowing its members to identify the club's VHF nets quickly and easily. A permanent callsign GB1IBC has been allocated for VHF net use; the DTI's letter says that "...it would be for use only by the net controllers (who would also be required to give their personal callsigns from time to time). There will be no net controller within 30 miles of another...." Also, for RAIBC special-event stations "....A permanent callsign GBOIBC would be allocated free of charge".

Free plug time - for details of RAIBC contact the Chairman, Angus McKenzie at 57 Fitzalan Road, Finchley, London N3 3DG.

DEFENCE SPECTRUM REVIEW REPORT:

The report of the "Independent Review of Defence Radio Frequency Spectrum (470 MHz to 3400 MHz)" was published recently - if you fancy some light bedtime reading you can get your free copy from the DTI. The terms of reference of the committee which published the report were "To review the current and foreseen use of those parts of the radio frequency spectrum which are allocated nationally for use in connection with national defence and the way in which the Ministry of Defence manages and administers such use; to report jointly to the Secretaries of State for Defence and for Trade & Industry; and to make recommendations as appropriate".

The Society had some input to the Report and is generally pleased with the outcome. In a nutshell, the report's conclusions were that MoD spectrum should be more widely shared with civil users wherever defence interests aren't jeopardised and that MoD and the DTI should explore the use of "pre-emptive" management techniques as a means for increasing band sharing with civil users.

EMC - WHERE WE'RE AT:

It occurred to us the other day that it's been some time since we spelt out the current legislative and political position on standards relating to EMC. The present position is that there is a current voluntary UK standard, the dreaded BS905. This only applies to a limited class of domestic equipment and anyway only relates to a limited frequency range around 26-30 MHz. In recent years a European-wide standard has been under discussion by a body known as CENELEC. As we've mentioned in previous Bulletins, this proposed a mandatory immunity to a level of about 1.8V/m up to around 150 MHz - but again only for a limited range of domestic equipment. The Society felt that the CENELEC proposals were an improvement but that the levels mooted were nowhere near realistic for domestic amateur operation.

However, as they say in the Services, "it's all changed" - or at least it's all been overtaken by the moves towards a "European market" in 1992. An "EEC Directive" on electromagnetic compatibility, which will apply in all EEC countries, is currently being prepared: it appears to apply to ALL electronic equipment and to cover both emissions and susceptibility. The proposed levels are not yet known. What seems inescapably true to us is

that the bureaucracy involved could be fairly ferocious. One of the tenets of the EEC is that there should be no barriers to free trade within the community - meaning that it then becomes extremely difficult for one country to adopt standards which are higher than the "common" standard because this could be construed as putting up barriers to trade. If you think this sounds a bit like the 'Party Games' episode of "Yes Prime Minister", don't blame us....

The effects of this Directive could cut both ways. Whilst it may increase EMC standards in consumer equipment - which would certainly be a Good Thing - the majority of amateur equipment is now commercial and may therefore be affected by the terms of any legislation. In principle this could have a seriously nasty effect on amateurs - for example, what happens if you sell a modified commercial rig? The extent of which the Directive will apply to amateur equipment is still to be decided, but we've been making all the right noises in the right places for some time.

Do you ever feel that the amount of bureaucracy in the world is increasing exponentially? We do...

VHF SNIPPETS

Who'll be the first to use the new /M licence facility to activate some wet squares next year? Various people apparently already laying plans - more in the columns, no doubt.

A 144 MHz QSO the other day brought up the question of how to measure your feeder loss accurately - especially relevant to 50 MHz and keeping the ERP limit, also to working out whether your 10-year-old run of UR67 is even lossier than you thought. One quick and easy way if you have a reasonably accurate power meter which reads both forward and reverse power directly (like a Bird, for instance) goes like this. Open-circuit the far end of the feeder. Switch the power meter to its lowest range (or stick in your lowest-power plug-in) and feed enough RF in from the station Tx to give a reasonable reading - for the sake of the PA don't pile on more than a few watts. Measure the forward power and then the reverse power and make a note of the readings. Divide reverse power by forward power and take the logarithm of the result; then multiply by 10 and divide by 2 (the latter because the RF has gone there and back twice, so to speak). Answer is feeder loss in dB.

We hear that - in the course of a routine station inspection - the RIS recently asked someone running a Tempo on 144 MHz how he ensured that he wasn't running more power than the licence permits. Specifically, that his PEP - defined as "the average power supplied to the antenna by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions" - was not being exceeded. Matey's answer evidently didn't convince them and they asked him to demonstrate - which he couldn't. Apparently "....further action will follow". If you have an amplifier which can generate in excess of the legal limit, can you demonstrate to the RIS that you're not delivering more power to the feeder than will result in 26 dBW PEP at the antenna? Is this a cue for an "In Practice" piece, perhaps?

If you haven't been licensed all that long, beware one way of apparently measuring power. Did you know that the "Oskerblock" twin-meter power/SWR indicator - still around new in shops as well as second-hand at rallies - starts to indicate a DECREASE in power on 144 MHz when you put more than about 100W through it? Can be very confusing when you're setting-up a new amplifier.....



Sylvia Manco of RSGB's accounts staff demonstrating the computer system to Rt.Hon. Cecil Parkinson, MP for Hertsmere. Mr Parkinson visited RSGB HQ recently to tour the building and discuss Project Y.E.A.R. Looking on are Sir Richard Davies, KCV0, G2XM, RSGB President, and David Evans, G3OUF, RSGB Secretary (right).

NEC REPORT - Part 2:

Last month, we promised you some of the greetings messages which were sent to the RSGB to mark its 75th Anniversary. Here's a selection, along with those of other organisations;

"On behalf of the The International Amateur Radio Union, an organisation of 126 national Societies representing nearly two million radio amateurs, congratulations to the Radio Society of Great Britain on the 75th anniversary of their founding. Your Society has been a leader in all facets of amateur radio from the very beginning of history, a leadership that has been beneficial not only to your own members in Great Britain but to amateur radio worldwide. We are grateful for the important role you have played in international amateur radio, and we look forward to your continued pre-eminence for many years to come."

Richard L Baldwin, W1RU
President, International Amateur Radio Union

"I send my congratulations and best wishes to RSGB on the occasion of this 75th anniversary."

Owen K Garriott, WSLFL Former
NASA Astronaut

"May 1 on behalf of the Committee and members of the IRTS wish you and your members our congratulations and best wishes on your Society's 75th anniversary. Our two Societies have in the past very close links and I would hope that this special relationship will continue to develop in the future. The Radio Society of Great Britain has and continues to do a tremendous amount of work on behalf of radio amateurs worldwide - long may you continue."

W J Barron, EI6BUB President,
Irish Radio Transmitters Society

"The Malaysian Amateur Radio Transmitters' Society joins me in congratulating you on your Society's 75th birthday. All Malaysian Amateurs wish all those present on this auspicious occasion our good wishes."

Tommy Lim 9M2CH President,
Malaysian Amateur Radio Transmitters Society

"We the Gibraltar Amateur Radio Society and all its members wish you all a very happy 75th anniversary. We hope that you may continue for many more years to

provide the excellent service that you give to all radio amateurs, not just in the UK but all over the World."

Colin D Wilson, ZB2IP President,
Gibraltar Amateur Radio Society

"On behalf of all radio amateurs in Kuwait, I take this opportunity to congratulate the radio amateurs and the people of Great Britain on the occasion of the 75th Anniversary of the RSGB."

Ahmed K Al-Jassim, 9K2DQ Kuwait
Amateur Radio Society

"On behalf of the New Zealand Association of Radio Transmitters Incorporated it is my privilege to extend congratulations and best wishes to the Radio Society of Great Britain on the occasion of your seventy-fifth Anniversary. The RSGB has maintained a consistently high standard of leadership in amateur radio through these seventy-five years and I am confident it will continue in this role into the far future."

Terry Carrell, ZL3QL President,
NZART.

"With enthusiasm and best wishes, I extend greetings from the National Aeronautics and Space Administration and from myself. I wish that I could be there to show my support for the Project YEAR that will be launched on 15 July. "Youth into Electronics via Amateur Radio" is a theme that I would very much like to see spread to the U.S. Amateur Radio offers young people an opportunity to actually participate in the adventure and discovery of using technology to communicate beyond every day horizons. The means may be by ionospheric bounce, moon-bounce, or amateur satellite relay, but the skills developed, the contact with technically orientated people who enjoy their avocation, and the experience of successfully mastering a challenging technology are good for an individual and good for a nation."

Anthony W. England, WOORE NASA
Astronaut

"On this occasion it is my privilege and pleasure to convey to you the congratulations and best wishes of the radio amateurs of the United States, who, from the earliest attempts at trans-Atlantic radio communication, have felt a special bond with their colleagues in the United Kingdom. Could the founders of the London Wireless Club possibly have imagined a Society having tens of thousands of

members and occupying a position of leadership in an amateur radio world with nearly two million adherents in virtually every corner of the globe? I think not - but I think they would be very proud of what has been built upon the foundation they laid. It is my earnest hope that the future generations of radio amateurs will regard your decisions and actions with the same respect that was earned by our forebears, three-quarters of a century ago."

Larry E Price, W4RA, President
of ARRL

"On behalf of all members of the Antigua and Barbuda Amateur Radio Society, we wish to extend our congratulations and sincere good wishes on your 75th Anniversary. We hope that the entire celebrations of your prestigious Society will be overwhelmingly successful and will secure for the RSGB continued leadership in the advancement of amateur radio for decades to come."

The Antigua and Barbuda ARS

"It is with great honour that my Society and I send to all our British friends, on this special occasion, the best wishes for the future of the Radio Society of Great Britain."

Alessio Ortona, I1BYH, President
of the Associazione Radioamatori Italiani

"On behalf of the Finnish Amateur Radio League, I have the honour to congratulate the Radio Society of Great Britain for its 75 years of successful activity dedicated to the furtherance of 'the world's best and most instructive hobby'. The noble traditions of our hobby have been furthered with distinction by the RSGB for the past 75 years. The Finnish Amateur Radio League is wishing the Radio Society of Great Britain all the very best on this, the 75th Anniversary."

Seppo Sisatto, OH2EA, President
of SRAL

"I sincerely congratulate your Society on the marvellous development it has achieved in the period of 75 years and on the leading role in the world amateur radio community it has been playing."

Masayoshi Fujioka, JN1UXU,
Secretary IARU Region 3.

"It is with great pleasure that we send you our warmest congratulations on your 75th

Anniversary, both personally and on behalf of the members of the Deutscher Amateur Radio Club. Three-quarters of a century is indeed a long time and throughout that time the RSGB has worked tirelessly on behalf of all radio amateurs. We are proud to have worked together in the past and look forward to continued co-operation in the future."

Hans Berg, DJ6TJ, International Liaison Officer, DARC

"I am indeed honoured and most grateful to the Radio Society of Great Britain for giving me this opportunity, on behalf of not only the Japan Amateur Radio League but all Japanese hams as well, to extend to the President, Directors and all members of your prestigious Society, my very sincere congratulations and best wishes marking this auspicious occasion, the 75th Anniversary Year of amateur radio activities in the United Kingdom"

Shozo Hara, JA1AN, President of JARL.

"The members of my Society (Singapore Amateur Radio Transmitting Society) join me in congratulating the RSGB on the occasion of its 75th Anniversary. The RSGB has helped to influence the growth of amateur radio in Commonwealth countries such as Singapore. We express our appreciation for your leadership in matters relating to the development and encouragement of amateur radio."

K C Selvadurai, 9V1UV, President of SARTS.

"It is a real pleasure for Radio Society of Senegal to congratulate the RSGB. We wish a good success to your 75th anniversary..... Happy Birthday to you."

GW1KI, President of ARAS.

"On the occasion of the 75th Anniversary Celebration of the RSGB, the members of this Association (Amateur Radio Association of Bahrain) convey their heartiest congratulations to your Society, together with their best wishes for continued future success in betterment of the Amateur Radio Service, worldwide."

S.K. Street, A92BE, Chairman ARAB.

"It is my pleasure and privilege to extend hearty congratulations to the Radio Society of Great Britain on its 75th Anniversary. The members, officers and Directors of

the Union Belge des Amateurs-Emetteurs wish you continued success in promoting radio-amateurism throughout the whole palette of its so numerous specialities."

Gaston Bertels, ON4WF, President of UBA.

"May I extend congratulations to the Society on such a memorable occasion."

Sir Brian Rix CBE DL, G2DQU.

"I feel honoured to have the opportunity to congratulate the President, Council and all RSGB members on the RSGB's 75th Anniversary. The links between RSGB and IARU always have been and still are very strong..... RSGB continues to co-operate with and give service to us, members of IARU, on a large scale of activities in which IARU is involved. We, members of IARU Region 1, consider ourselves as lucky to have RSGB as a Member Society that through the many years of its existence only grew stronger and stronger. In the name of all IARU Region 1 members I wish the Radio Society of Great Britain continuous good health, an even further growing membership and look forward to continued excellent co-operation in many years to come."

Louis van de Nadort, PA0LOU, Chairman IARU Region 1.

"Please accept our heartiest congratulations on the auspicious occasion of your 75th anniversary. The Radio Society of Kenya owes her existence to the RSGB and members thereof who brought amateur radio to this country during colonial days. Having reached the milestone of 75 years of service to amateur radio and radio amateur operators, we wish you continuing success in the enhancement of the hobby."

Leonard H Raburn Jr, 5Z4DU, Chairman of RSK.

"The Scout Association has great pleasure in saluting the Radio Society of Great Britain in this important year and looks forward to many more years of joint activity and co-operation."

Garth Morrison, Chief Scout.

"It is with great pleasure that I write to congratulate the Radio Society of Great Britain on their many achievements in the past at the time of your 75th anniversary. The BBC has many members of your Society within our ranks and they have been in the vanguard of

broadcasting development."

Peter Clemenston, Head of Engineering, Transmission Support Services, BBC.

"May we extend to you our most sincere congratulations on your grand achievement of 75 years of the Radio Society of Great Britain"

Ahmed Bin Suwaidan Al Balushi, A4XFK, President of the Royal Omani Amateur Radio Society.

"I welcome this opportunity to send the congratulations and good wishes of the Girl Guides Association to the Radio Society of Great Britain on the occasion of the Society's 75th anniversary. Concerned as we are to prepare girls for their future in a technological society, we look forward to working with the RSGB on 'Youth into Electronics via Amateur Radio', thus continuing the work done in Women into Science and Engineering Year in 1984."

Marjorie W Hayter, General Secretary, The Girl Guides Association.

"I have great pleasure in writing to congratulate you upon the occasion of the 75th Anniversary of the Radio Society of Great Britain. Few people in 1913 could have foreseen the developments which have taken place in radiocommunications, particularly those of the last few years. In no small measure the success of radio has been a function of the sustained enthusiasm of radio amateurs over the past 75 years; the significant contribution they have made to technical developments and their exploitation of radio to develop new types of radio services. Over the years, they have done much to foster international goodwill and they have also made some dramatic interventions to save life. On behalf of the Radiocommunications Division and the Radio Investigation Service I offer the Society our best wishes for the anniversary celebrations and for the future."

M V Coolican, Head of Radio & Licence Enforcement, Radio Communications Division, DTI.

"On the auspicious occasion of the 75th anniversary of the Radio Society of Great Britain, the Member Societies, Secretariat and Directors of the IARU Region 1 Association wish to pay tribute to the Society and its members for 75 years of unstinting service to the radio amateurs of the world. Since its inception in 1913, the RSGB has provided outstanding leadership in the field of amateur radio both at

home and abroad. Congratulations on a magnificent record and may the next 75 years be as fruitful."

David Rankin, 9V1RH/VK3QV,
Chairman of Directors, IARU
Region III

"Throughout its existence the Radio Society of Great Britain has been a leader, effective spokesman and active participant in the world amateur community. On behalf of the Directors, Officers and members of the Canadian Radio Relay League, please accept our sincere congratulations and best wishes on the 75th anniversary of your Society."

Thomas B J Atkins, VE3CDM, CRRL
President

"Please accept my warmest congratulations, and those of my Department, on the Society's 75th anniversary. Amateur radio's contribution to the development of radio in this country is well recognised. We applaud its role in furthering technical advance in radio, in spreading technical knowledge and skills widely and encouraging many people into careers in electronics and engineering. Since radio's earliest days, the Society has been at the forefront of the development of the hobby. We pay tribute to its outstanding record of achievement and service. My Department fully supports the aims of the Society's Project Y.E.A.R. - 'Youth into Electronics via Amateur Radio'. We well recognise the importance of amateur radio on a starting point for our radio engineers of the future. For this reason, we are glad, as a contribution to the 75th anniversary year, to offer, in conjunction with the Society, the 'Young Amateur of the Year Award'. We look forward to hearing more from the Society about Project Y.E.A.R. The concept of a student licence is an exciting one. I offer the Department's fullest co-operation in discussing these proposals with you over the next few months."

John Butcher MP, Parliamentary
Under Secretary of State for
Industry & Consumer Affairs.

Next month, we hope to be able to publish the full text of His Royal Highness Prince Philip, The Duke of Edinburgh's speech given during the opening of this year's National Convention in Birmingham.

The December issue will carry a photographic round-up of the 75th Anniversary celebrations and a super Christmas Quiz!

CRIME PREVENTION AT NEC:

For the first time since the Society has been running its National Convention at Birmingham, the local Crime Prevention Department was invited to put on a stand - with the aim of giving visitors hints and tips on protecting their amateur radio equipment in the home and in cars.

The West Midlands Police Crime Prevention Department responded eagerly to our invitation; they duly set up a magnificent stand complete with two Crime Prevention Officers, who were on hand to give expert advice. This proved amazingly popular, and indeed they had to send back to their HQ for more literature three times on the first day!

Several examples of door locks, window locks and alarms were on display. Also on the stand was a car rigged out with various alarm systems, and visitors were invited to try and enter the vehicle without setting off the alarms. The alarms were heard sounding throughout the day and one can only assume that no-one was successful!

One of the most useful publications available from the stand was a booklet entitled "Practical Ways to Crack Crime". It covers protection of your family, your home, your possessions, your neighbourhood, your community and your workplace as well as giving a comprehensive list of other crime prevention publications. Copies of the booklet are freely available from your local crime prevention unit or the Home Office.

At some point in the future we hope to be able to run a series of articles on crime prevention in the News Bulletin.

75th ANNIVERSARY SOUVENIRS:

In the July issue of RadCom we mentioned a number of special 75th Anniversary souvenirs which are available to members, and with Christmas just around the corner (yes - only 72 more shopping days to go!) you might like to have a look at what we've got on offer. These items have been in great demand since the announcement, but a few are still available for those who haven't yet got round to sending off for them.

ANNIVERSARY CALENDAR:

The calendar was produced in response to a great many letters from members who wanted copies of the recent 'sepia' RadCom covers. It commenced at July 1988 and will end at December 1989 - in other words it runs for eighteen months.

It is printed on high quality

silk-finish paper suitable for framing with each sheet carrying three month's worth of dates. When the calendar itself has timed-out you can chop that bit off the bottom and frame the print. These splendid items were originally available from RSGB HQ at a cost of £2.30 over the counter or £2.95 by post. However, if you buy one now for next year, not only will you get three 'bonus' months so you can hang it up straight away, you'll also get it at the pre-Christmas special offer price of £1.50 for members over the counter and £1.95 by post!

ANNIVERSARY TIES:

These navy blue ties are of a higher quality than our standard ties and depict, within the limitations of the weaving process, the anniversary logo just below the knot - they'll go very well with that new shirt you're getting for Christmas. They are in a limited edition and are selling very fast so be sure to get yours before they sell out! You can pick one up from RSGB HQ and the cost, to members only, is £5.50 over the counter or £5.95 by post.

ANNIVERSARY BADGES:

These hand-finished enamel badges of the 75th Anniversary logo have been selling like hot BFY50s. They are in red, white and blue with gilt edges and a pin fastening. Again, they are in a limited edition and look very smart on any lapel. The cost, to members only, is £1.95 over the counter or £2.10 by post.

ENGRAVED CRYSTAL WHISKY TUMBLERS:

These extremely posh Rowton Crystal whisky tumblers are engraved with the 75th anniversary logo - ideal for a Christmas tippie! Like the other souvenir items, they are in a very limited edition and are quickly becoming collectors' items. They are presentation boxed in pairs or singles and are available over the counter at RSGB HQ or from RSGB stands at rallies. Singles only are available by mail-order at a cost of £9.25. The over the counter prices to members only are £7.95 each or £15.95 for a pair (contents NOT included, before you ask....)

QSL CARDS:

For many years now the Society has been looking at the possibility of producing QSL cards for members. The difficulty has always been the printing of call signs onto individual cards, but since many

members now use 'Do-It-Yourself' cards we've decided to offer a special series of QSL cards depicting the very popular photographs used on recent covers of RadCom. Ideal for special event stations, they are priced at £2.50 per 100 cards for members and £2.94 for non-members over the counter (which we think you will find is very competitive if you compare prices) or £3.25 for members and £3.82 for non-members by post. When ordering cards please indicate your preferred cover pic by using the code "QSL1" for January, "QSL2" for February, and so on to "QSL6" for June. Also, please indicate a second preference in case the cards of your choice are out of print.

SOUVENIR BROCHURE:

A number of the special 75th anniversary souvenir brochures entitled "Radio Society of Great Britain - Seventy Five Years" are still available from RSGB HQ. The brochure contains brief details of the founding of the Society in 1913 and a look at the state of play in 1988, a letter of congratulations to all members of the Society from His Royal Highness Prince Philip, Duke of Edinburgh KG, Patron of the RSGB, an outline of the Society's "Project Y.E.A.R." and details of all the events which went to make up the Society's 75th Anniversary celebrations. If you would like to obtain a copy, please send a large A4-sized 26p stamped addressed envelope plus two additional loose 19p stamps to the Membership Services Department at RSGB HQ, marking your envelope "75th Brochure".

WELSH AMATEUR RADIO CONVENTION

Oakdale Community College,
Blackwood, Gwent.

SUNDAY 2 OCTOBER 1988
10am - 5pm

* Trade Exhibits * RSGB Stand *
* Convention station *
* Bring & Buy * Refreshments *

Official opening at 11am
by

Sir Richard Davies, KCVO, G2XM,
President of RSGB

LECTURE PROGRAMME

"HF Antennas and Feeder Systems"
by Louis Varney, GSRV/CX5RV
plus other features

Admission: £1.50 at the door
(includes £300 cash prizes draw)

Talk-in available from 9am on S22
Exit 28 off M4 Motorway

GUIDELINES FOR UNATTENDED DIGITAL OPERATION

The second part of this month's lead story ("Packet Radio Now Legal") deals with the intricacies of the licence conditions associated with this weird and wonderful digital mode. Here, we try to make life a little easier for you by giving guidelines which have been produced by the Society to help ensure that the facility of unattended operation is used without causing inconvenience to other band users.

1. At all times be aware of the potentially harmful effects of the station becoming faulty whilst there is no-one present. This may make a frequency unusable by other amateurs from many miles around for long periods. It may, far more seriously, interfere with other users of the radio spectrum - which may include the emergency services. You also need to be aware of your licence condition that stations may be closed down, if circumstances warrant this, on demand by the DTI. Ultimately, the inability to close down a station quickly could result in loss of life. It is therefore most important to minimise this risk by adhering to these guidelines.

2. The basic operating principle must be "do as you would be done by"; operate the station as if you had to live next door to one.

No receiver or transmitter is perfect, and whilst occasional transmissions made by conventional amateur operators cause few problems, even minor shortcomings in a station which is heavily used - e.g. as a digipeater or mailbox - may cause considerable nuisance to local amateurs.

In particular, check that audio levels and the deviation are correctly set so as to keep the transmission as narrow as possible, that the harmonic levels are low (greater than 60 dBc), that there are no spurious emissions and that the noise sidebands of the transmitter are low enough not to cause a nuisance to nearby amateurs.

3. Ensure that the station uses frequencies only within those band sections designated by the licence as being for unattended operation. It is advisable to adhere to frequencies allocated in the bandplan for packet operation.

4. Adhere strictly to the terms of the licence permitting such operation, in particular the frequency and power limitations. The power limit for unattended operation is much lower than for attended operation - and it is an ERP limit, not an output power limit. ERP is Effective Radiated Power, and is calculated by taking the output power of the transmitter, subtracting the power lost in the feeder and adding the power gain of the antenna. Several editions of Radio Communication and the Member's Handbook have contained a nomogram (the "Erpogram") for working out ERP on the 50 MHz band, but it will work just as well for other bands.

5. Ensure that all equipment which is part of the station - e.g. transmitter, TNC, computer, power supplies, etc - either recovers cleanly from interruptions in the power supply or will remain off after a power failure. Transmitters may power up on incorrect frequencies or modes, TNCs may use default data or hang up and computers may behave in unpredictable ways.

6. Ensure that a watchdog timer (implemented in hardware, not software) which stops the transmitter from operating for periods of more than a few seconds at a time is installed to minimise the impact of anything going badly wrong. This should be independent of any software which may cause the failure. Most TNCs incorporate such a timer, but some software-based systems may not. The timer should be so designed as to prevent the transmitter being keyed permanently following an interruption in the power supply to the station, or if the computer or TNC fails.

7. It is advisable (essential if long periods of unattended operation are envisaged) to install a clearly marked closedown switch external to the building housing the station. Local amateurs and members of your household should be advised of the location of this switch so that the station can be closed down quickly if the DTI judges it necessary, in the event of it causing undue or harmful interference in your absence.

Around the Groups

The deadline for the DECEMBER issue is Monday 24 OCTOBER latest, but if you can send items in earlier it would be much appreciated.

BARTG NEWS:

The British Amateur Radio Teleprinter Group has recently published a new booklet entitled "Amateur Radio Data Comms and BARTG". It is designed to help newcomers to packet, AMTOR, Fax and RTTY by giving details of the equipment needed, the basic theory and the way in which each mode is used. Also included is a brief history of data communications in amateur radio and beyond, details of the GB2ATG news transmissions, general information about BARTG and lastly, a membership form.

Copies of the booklet can be obtained free of charge on receipt of an A5 stamped addressed envelope sent to:-

Mrs Pat Beedie, GW6MOJ
Pfyntonlas
Salem
Llandeilo
Dyfed SA19 7NP

WAB NEWS:

Unfortunately, we weren't able to get the contest results (below) into last month's News Bulletin because of a shortage of space.

WAB Contest News

The next two WAB contests, the last for this year, take place as follows;

50 MHz SSB - Sunday 9 October
0900-1200 GMT
80m CW - Sunday 6 November
0930-1230 GMT

The results of the WAB 144 MHz QRO (high power) Contest have been released and the leading three stations in each section are as follows;

Single Operator Fixed:-

1st G6XVW - 334,125 points
2nd GOEMS - 291,975 points
3rd G6IJM - 168,560 points

Single Operator Portable:-

1st G1SGB/P - 450,730 points
2nd GWOCDA/P - 363,090 points
3rd G7ANV/P - 293,625 points

Multi Operator Fixed:-

NO ENTRIES



Some months ago we reported that the Ipswich RC was to run a special event station with the aim of training Scouts for the Communicators' Badge. Well, the event took place over the weekend 23/24 July and was a great success. Some 18 Scouts from half-a-dozen groups in the Ipswich area and all but one attained the badge. The District Commissioner, other Scouts and parents visited the station and were very impressed by the club's efforts. Over 250 contacts were made and QSL cards have been sent. The photograph shows Dave, G0/KA2DC with four of the Scouts at the 2m station.

Multi Operator Portable:-

1st G1NUS/P - 504,000 points
2nd G4MWS/P - 382,930 points
3rd G0FDX/P - 252,720 points

Mobile:-

1st G6OKU/M - 10,300 points
(1 ENTRY ONLY)

SWL Section:-

NO ENTRIES

A full list of the contest results and rules for future WAB contests can be obtained from:-

The Contest Manager
Laurie Segal, G6XLL
21 Blackstone Road
Cricklewood
London NW2 6DA

Further information about WAB generally can be obtained from:-

Brian Morris, G4KSQ
22 Burdell Avenue
Sandhills Estate
Headington
Oxford OX3 8ED

GB75RS - RSGB HQ:

With only three months to go before the close of the RSGB 75 Award (31 December 1988) you'll have to be quick if you want to collect all the stations/points required. The rules for the award appeared in the June issue of Radio Communication and are reprinted in this month's issue. GB75RS is one of the stations required and has been active at various times throughout the year. There were three other stations which could have been worked for the award. These were GB75AC, GB75ER and GB75HQ, all of which were active during July. If you were not able to work any of the stations during that time, you could try for GB75RS or five other GB75 calls plus, of course, the 75 RSGB members. For the next three months, HQ staff will endeavour to put GB75RS on the air as often as possible at lunchtimes and early evenings. It may also be possible to put it on the air during some weekends. The station is located at RSGB Headquarters in Potters Bar

and may best be found on or around any of the following frequencies:

3525 kHz CW
3750 kHz SSB
7025 kHz CW
7049 kHz SSB
14.025 MHz CW
14.250 MHz SSB
21.025 MHz CW
21.250 MHz SSB
28.025 MHz CW
28.550 MHz SSB
50.550 MHz SSB
144.250 MHz SSB
145.525 MHz FM
432.250 MHz SSB

However, the exact times and modes of operation will depend on the availability of operators.

GB750LD:

The Thornbury & District ARC will be running the special event station during the Oldbury-on-Severn Nuclear Power Station's 21st Anniversary open days over the weekend 1/2 October. Activity will commence on the Friday Evening and will then run from 12 noon on Saturday to 6pm on Sunday. All are welcome to visit the radio station and the power station during the open days from 12 noon to 5pm Saturday and from 11am to 5pm on Sunday. Special QSL cards will be available for all contacts and SWL reports.

IMPERIAL COLLEGE ARS - 60 YEARS:

During next month the Imperial College ARS, based at the University of London, will be celebrating its 60th year of affiliation to the RSGB. To commemorate this event and to mark the start of a new university year, the society will be running two special event stations, GB6TIC and GB75IC. It is intended to try and contact as many old students of Imperial College as possible in addition to other university societies both at home and abroad.

Operation will take place in as many bands as possible including 2m packet and 70cm FSTV, between 3 October and 3 November, and a special QSL card will be sent for all contacts with either station. (ALSO: see 'Helplines')

THANKS FROM GB75RPP:

During a recent 24-hour marathon operation, the Trowbridge & DARC notched up 469 contacts in 33 countries and raised over £200 for the Rotary Polio Plus Appeal. The club wishes to thank all those stations who took the trouble to contact GB75RPP and QSL cards will be en route as soon as possible.

GB2DWR - REPORT:

United Distillers plc is one of the world's largest producers of Scotch Whisky and the company kindly allowed the Mid-Lanark ARS to operate from four different malt whisky distilleries over a period of one week travelling along the whisky route. All the distilleries were located in areas of great scenic beauty; two were in Speyside, one in Aberdeenshire and the last in Perthshire.

Each of the stations was set up in the Visitors' Centre at each distillery so members of the public were able to see just what was going on and talk to the various members of the club about amateur radio. It was a mammoth PR exercise and many hundreds of people got their first taste of amateur radio (and possibly their first taste of real Scotch!). The hospitality at each location was excellent with coffee, tea, cakes and meals all provided free of charge. At Royal Lochnagar the operators were even treated to a wee dram of 'Special Reserve'.

Operation took place in the HF bands from 80m to 20m using CW and SSB. At times there were four stations all operating at the same time. The event was made all the more possible by the use of a portable tilt-over tower, kindly loaned by Norman Brown, GM4VHZ of Tennamasts in Beith, Ayrshire. The mast was towed between the locations on the 500 mile round trip by John, GM4WQQ and there were no problems despite the sometimes difficult terrain.

The QSL cards and certificates were all designed and printed by

United Distillers. Incidentally, the certificate is still available to anyone in the UK and N.Ireland who made contact with the station at two separate locations, or for one single contact in the case of overseas amateurs. If you haven't yet sent for yours, please write to GB2DWR, PO Box 20, Motherwell, Scotland and enclose 3 IRCs or a stamped addressed LABEL.

During the week-long event, 2,148 contacts were made in 103 countries; sixty-three and a half hours were spent on the air; 500 miles was covered and a total of eight bottles of single malt whisky were consumed, all by the following operators - GM3MTH, GM4UQG, GM3MQO, GM4WQQ, GM1MRY and GM3ITN.

Finally, thanks must go to United Distillers, Tennamasts, the staff of RSGB's Membership Services Dept for arranging the special callsign and the News Bulletin staff for publishing all the details of the award prior to the event taking place.

The Mid-Lanark ARS has been invited back again next year for a similar event - volunteers please form an orderly queue!

(Photo below shows GB2DWR team at Royal Lochnagar. TNX Jim Henderson)

"WORKED ALL FIFE" CERTIFICATE:

The Glenrothes and District ARC offers the above certificate to any amateur station who has worked the required number of stations in the Fife region of Scotland. The requirements are as follows:-

UK - 10 stations in Fife.
Non-UK - 5 stations in Fife.



The award can be geocal or for a specific band and applicants should send a large A4 stamped addressed envelope together with a log extract. Overseas applicants should include sufficient IRCs to cover the return postage. The address for applications is:-

John F Hardwick, GM4ALA
4 Holyrood Avenue
Glenrothes
Fife KY6 3PF

CRYSTAL SET COMPETITION:

The Cambridge & DARC is running a competition to promote amateur radio to youngsters. The competition is in two sections, each offering a prize of £10.00 for the winners and a year's free membership of the club for the winners and runners-up in each section. The sections are as follows:-

Section 1 - under 17 years

To enter this section the entrant must be under 17 years of age and must build an unpowered crystal set from basic components.

Section 2 - under 18 years

To enter this section the entrant must be under 18 years of age and build a powered transistor radio from basic components using up to 3 transistors.

The competition will be judged by the committee of the Cambridge & DARC on 2 December 1988 at the Coleridge Community Centre, Cambridge, commencing at 8pm. The judges will be looking for well constructed working sets.

Useful background information can be obtained from various sources; the library (try "Build a Transistor Radio" by Ladybird Books), other amateurs, members of the family. Entrants must do all the construction work themselves but can get as much advice as they wish.

If you've got a youngster who would like to enter the competition, please write to:-

Mike Wise, GOGPX
PRO, Cambridge & DARC
75 Cambridge Road
Oakington
Cambs CB4 5BG

NEW BYLARA CHAIRMAN:

The new Chairman of BYLARA, the British Young Ladies' Amateur Radio Association, is Mrs Anne Skinner, GOBIR of Halfway Lock Cottage, Upper Camholds Lane, Stoke Prior, Bromsgrove, Worcs.

All enquiries about BYLARA should be sent to the Secretary, Alison Soars, GOALI of 84 Ridge Road, Kingswinford, West Midlands DY6 9RG. tel: 0384-279769.

MAXPAK NEWS:

MAXPAK, the Midlands AX25 Packet Group, has been without a permanent secretary since its AGM in June. For the time being, the Chairman Dave Beotley, G4RVK, will deal with any correspondence on a temporary basis. Dave's address is:-

10 Churnet Grove
Perton
Wolverhampton

The Group's digipeater GB3AP continues to be operational pending its proposed site change which is awaiting technical clearance from the IBA and final clearance from the DTI. The joint project with the Midland Amateur Repeater Group for a second digipeater (proposed callsign GB7MM) is continuing.

GB75FHR - FRENHAM HEIGHTS RAIDIO:

No, not a glitch in the word processor's spell-check facility, but more on that in a moment.

The Frensham Heights School Amateur Radio Club will be running this special event station for 24 hours non-stop from midnight on 21 October. The station serves three purposes - it celebrates the 75th anniversary of the RSGB, the founding of the school itself and to publicise and help raise funds for the school's "RAIDIO" scheme. The first two purposes are self-evident but the third requires a little more explanation.

In 1985, GB4FHR was on the air to celebrate the school's 60th birthday and to raise funds in the form of private sponsorship for the Band-Aid Appeal, which was then at its height. Towards the end of the day's operation the station was called by a very strong station in central Sudan. It turned out that the operator of the station was an official working for Band-Aid in El Obeid. Through him, and with the help of Oxfam, the school was able to fund directly a crop-growing scheme mounted by three Sudanese schools. The project still continues today to the considerable benefit of surrounding villages. Shortly after this surprise success a contact with a station in Kenya led to a second scheme whereby the school club raised money to help with the construction of a primary school.

Discussions with local amateurs and one or two others further afield led to the idea of a permanent fund dedicated to disaster relief and regularly

charged by externally sponsored amateur radio events. A number of other ideas concerning radio activities in relation to disaster relief were mooted and a draft document outlining the proposed strategies were prepared and circulated. Sadly, response from the school itself, scout and regional clubs contacted was disappointing and, after further attempts to generate interest, Frensham Heights School ARC had to accept solo control of the scheme.

The club is now anxious to have another go and to that end they will be looking for as many contacts as possible on 22 October and for one month after the initial marathon. It is hoped that a good sum can be raised from local sponsorship for the two African projects.

If you would like to know more about the club's Ham Radio Aid (RAIDIO) projects, please contact:-

G4FHR, Frensham Heights School
Rowledge
Surrey, GU10 4EA.

THE PENNINE AWARD:

The East Lancs ARC has just announced the Pennine Award which is open to all amateurs and SWLs, worldwide, who have worked or heard stations in the Ordnance Survey Map areas SD62, 63, 64, 72, 73, 74, 82, 83, 84 (the same as WAB areas).

The award will be available in four categories for both the 160m and 2m bands, and coloured certificates will be issued in respect of the Bronze, Silver and Gold categories, with a shield for the top category. The requirements for each category are as follows:-

Stations in the Pennine area

160m Bronze - 30 contacts
Silver - 60 contacts
Gold - 100 contacts
Shield - 150 contacts

2m Bronze - 60 contacts
Silver - 100 contacts
Gold - 150 contacts
Shield - 250 contacts

Stations outside the Pennine area

160m Bronze - 15 contacts
Silver - 30 contacts
Gold - 50 contacts
Shield - 75 contacts

2m Bronze - 30 contacts
Silver - 60 contacts
Gold - 100 contacts
Shield - 150 contacts

ALL stations

Callsign plus /P, /A, or /M will count as one contact/heard only.

All contacts made/received on or after 1 August 1974 will be valid for the award.

There is no fee.

Claims may be submitted for either 160m or 2m but NOT mixed. Log entries should be submitted using one side of the log sheets only and be verified by two other licensed amateurs.

JOTA COUNTDOWN - FINAL INFO:

Over the last few months we've been giving details of the things you need to do in preparation for this year's JOTA. The United Kingdom Jamboree On The Air Team has compiled a very useful "Calendar of Preparations for JOTA" designed to help Scout Leaders and radio amateurs plan for the event which will be held over the weekend 15/16 October. The information which we've been giving was taken from the calendar and here's the final list of things to do this month.

Scouts:

- Let Scouts practice, using tape recorders, to avoid mic-shyness on JOTA weekend. If they are to be able to speak over the air, practice will acquaint them (with the help of radio amateurs) with the type and duration of the greetings messages they are permitted to pass and the things which they may wish to include personally.
- Ensure that there will be enough to interest Scouts and other visitors so that they are not simply left to watch what's going on.
- Above all - enjoy the event!

When it's all over, send a report of your group's activities to the UK JOTA Team at Gilwell Park. Enclose two large (A4 flat-size) stamped addressed envelopes; one for participation certificates for each of the amateurs who helped you with the event, and the other for a copy of the UK JOTA Report which will be despatched later.

Amateurs:

- Liaise with the Scout Leader for the station report which will be submitted to the UK JOTA Team. The Scout Leader will need the logbook to find the number of stations/countries worked etc.
- Make a note of the following frequencies on which you are likely to find Scout activity.

CW:- 3590 kHz
7030 kHz
14.070 MHz
21.140 MHz



The Grafton RS recently operated the special event station GB2BGS at the Bounds Green School summer fair. Amidst all the high-tech and Japanese 'black boxes' was a working model of an old R1155 receiver which seemed to be the constant centre of attraction. Club members (left-right) Brian, GIDSY; John, GODFZ and Steve, G4RQV.

28,190 MHz
SSB:- 3740 kHz
7090 kHz
14.290 MHz
21.360 MHz
28.990 MHz

- Enjoy the event and Good DX!

When it's all over, please remember to complete QSL cards for anyone to whom you say over the air that you will send one and don't forget the unlicensed Scouts and others who pass greetings messages to you - they will be very disappointed and disillusioned if they don't receive a promised card.

Also, please arrange for QSL cards and sufficient envelopes to be sent to the GB prefix QSL Sub-manager who is:-

Mr M W Stoneham, G4RVV
"Hafnia" 139 Hever Avenue
West Kingsdown
Sevenoaks
Kent TN15 6DT

We hope that you and your local Scouts will have an enjoyable event this year, and to help make it even more enjoyable the Society will make up to 10 copies of the pilot issue of its new publication "DIY Radio" available to JOTA stations FREE OF CHARGE instead of the usual £1.50 per copy post paid. To obtain your copies, please write to the Circulation Department at RSGB HQ

indicating the number required.

If, after the event, your local Scout group would like additional copies, ask the Scout Leader to write to the same address and we'll see what we can do.

IRISH NET:

The IRIS informs us that there is a regular Irish Net which takes place from 11pm local time on most evenings. Operation is on either 14.263 or 21.263 MHz, plus or minus QRM. Many Irish emigrants in the USA and Canada use the net to keep in touch and several EI stations are on the air each time. However, more participation would be welcome from Irish amateurs living in other countries, especially on this side of the Atlantic.

RNARS AWARDS:

RNARS Awards Manager, Don Walmsley G3HZL, has written with a change of address. Don now lives at:-

15 Carters Croft
Upper Tean
Stoke-on-Trent
Staffordshire
ST10 4JB

Bob Earton, G3PQH, has taken over as Chairman of RNARS London Group and will deal with all queries regarding HMS Belfast, GB2RN and G4HMS.

Helplines

PHOTOS PLEASE:

Were you at the official opening of the RSGB's National Convention in the Lucas Centre at Birmingham's National Exhibition Centre?

Did you happen to take a photograph of Prince Philip being presented with his programme by a young lady at the start of his tour of the "75 Years of Radio" exhibition?

If the answer is yes, please send a copy to David Gough at RSGB HQ and let him know how much you want for the photo. All costs, including postage, will be refunded.

NO MORE CHASSIS-BASHING:

Does the name H L Smith mean anything to you? Does it bring back memories of aluminium chassis made to order and lovingly wrapped for you in proper brown paper? If not, you've missed one of life's great experiences. Messrs H L Smith was one of the last of the great Edgware Road emporia, where you could buy all sorts of interesting goodies and - as an extra - get chassis and other assorted metalwork made to order. Their prices always seemed to us to be ridiculously low and their products extremely well made, and there must be many members out there who've gone to "Smiths" over the years for something for the shack. Sadly it's all changed. The shop doesn't do chassis-bashing any more - it's concentrating on hi-fi and the like, as with so many establishments in the Edgware Road and Tottenham Court Road - but we felt we ought to mark its passing. Farewell H L Smith, chassis-bashers to generations of amateurs, and thank you for your efforts.

Plaintive plea for assistance - are there any chassis-bashing companies left out there, or have the Integrated Circuit Police closed you all down? Seriously, anyone who knows of and can recommend a replacement for our departed friends in the Edgware Road, please let us know at HQ and we'll let everyone else know.

CW "POPPING":

G4YDA has written for help in solving a nagging little problem. His Standard C5800 144 MHz multimode has a strange fault when used on CW. The initial key-up

results in a 'popping' sound on the first character. At slow speeds the fault is apparent on every character. However, from about 12 wpm upwards the phenomenon is only noticeable on the first character of each word.

Although G4YDA has read a couple of write-ups on the C5800, this particular fault hasn't been mentioned. However, it's now come to light that this is apparently a general fault with the model, and has been confirmed as such by agents in the UK. One of the agents claims to have cured the fault on someone else's rig but cannot remember what action was necessary. Letters to the manufacturers have remained unanswered.

Have you had a similar problem and was it cured? If so, please let G4YDA know since his CW activity is now very limited.

EXETER WIRELESS SOCIETY II:

In April's 'Helplines' we ran an item regarding the history of the Exeter & District Wireless Society and asked if anyone had any information. The present Chairman of the Exeter & DWS, Mr W G Weston, G3TDW, received a letter from an amateur by the name of Jim which stated that the society was formed on Friday 12 November 1920 with Mr H E Allcock as Secretary and Mr C Hoskins Snr as Chairman. The problem is that Jim didn't give his address, surname or call sign and G3TDW wants to get in touch with him again. The postmark on the envelope was somewhat blurred but appears to read "Ollersley Street" or "Bellesly Street", New Zealand. So Jim, if you read this, please write to G3TDW again, and please don't forget your address etc.

LAC - VACANCY:

The RSGB's Licensing Advisory Committee is responsible for all matters relating to Amateur Licensing including liaison with the Department of Trade & Industry, and the Amateur Radio Observation Service.

The work of this committee is fairly wide-ranging and can encompass most aspects of the hobby. Liaison with other RSGB Committees is covered largely by the existing ex-officio posts (eg. spectrum managers) but with the increasing amount of legislation which affects the hobby there is a

need for more effort to assist with the increased workload. The committee meets approximately 6-8 times a year but much of the work is carried out between meetings.

The successful candidate will have a good general knowledge of most aspects of the hobby and will be capable of drafting and responding to papers and proposals.

If you feel that you have the necessary skills to fill the vacancy, please write to:-

The Chairman
Licensing Advisory Committee
c/o RSGB Headquarters
Lambda House
Cranborne Road
Potters Bar EN6 3JE

WANT A PENPAL II?:

Luis Iglesias, EA1TE is an officer in the Spanish Civil Navy and is looking for a penpal of any age/sex to help him improve his command of the English language. His main interests, besides DX radio, are photography and travel. If you'd like to help Luis and perhaps learn Spanish at the same time, you can write to him at:-

PO Box 185
15080 La Coruna
Spain

MORE STAMPS PLEASE:

John Allsopp, G4YDM, recently contacted a number of RadCom columnists asking them to insert a request for new or used stamps from around the world to help with the purchase of a transceiver for a disabled amateur friend of his. The response to the request was overwhelming and John would like to thank all those amateurs and swls who took time to send stamps. Unfortunately he still does not quite have enough so if anyone has stamps which they do not want to keep, please send them direct to G4YDM (QTHR). Any remaining stamps will be put to good use in purchasing more equipment for other disabled amateurs.

OLD MANUALS WANTED:

Peter Sterry, G3CEU, would like to borrow a copy of an Engineering Manual on Muirhead magclips and syncros. The manual was published in the 1950s and is now out of print.

Also, a copy of the pre-war 3rd

Edition of the RSGB's "Guide to Amateur Radio". With this Peter wants to make a colour photocopy of the cover in order to restore his somewhat dilapidated copy.

All postage will be refunded and the greatest care will be taken with any books loaned. Peter can be contacted on 0256 58921.

UNIVERSITY SOCIETY NET:

The Imperial College ARS is suggesting that a 'University Society Net' is set up on Wednesday afternoons. Any Chairman of any other university amateur radio society is invited to write to:-

Mr K A Marlow, G7AFQ
Imperial College ARS
1.C. Union Building
Prince Consort Road
London SW7 2BB

...for further details.

WHERE IS HAROLD TONKS?:

Ray Slater has written to 'Helplines' with a plea for information about an old friend and former colleague who worked with him as a radio and television engineer about thirty years ago. Harold Tonks was a very keen and dedicated amateur radio operator and member of the RSGB. His last known address was Teignmouth Road, Selly Oak, Birmingham 29 and prior to that, he lived at Park Hill, Mosely, Birmingham 13 and Warstock Road, Birmingham 24.

Ray has now exhausted all his enquiries in the Birmingham area and hopes that one or our readers can give him some positive information. If you can help, please contact Ray at:-

27 Conway Road
Shirley
Solihull
West Midlands
B90 4RF

WANT A HOLIDAY DOWN-UNDER?

We've just received a letter from Don, VK4GF, who lives on Bribie Island, Queensland. Don has been licenced for 41 years and has enjoyed many contacts with UK amateurs during that time. Don would dearly love to make a trip to the UK in 1989 to meet many of his amateur friends and tour parts of the country he has heard so much about.

So, here's the deal; is there anyone who would like to exchange their house and car for a few months? Don's QTH is on a lovely island about one hour's drive north of Brisbane and is connected to the mainland by a two-lane bridge. It comprises of a large double-story

brick house, car, organ, boat and shack which is set up for HF, VHF and UHF with rotatable TH6DX antenna for DXing and RTTY with an Apple II E Plus computer. The weather in May, June, July and August is very nice and the island is good for fishing, golf, bowls and what have you.

Well, it all sounds very nice to us but what with trying to get the News Bulletin written each month, we don't have the time to go ourselves. If you'd like to take Don up on his offer, simply drop him a line. His address is:-

Don A Crowley, VK4GP
11 Tully Street
Bribie Island
Queensland
Australia 4507

Incidentally, Don can be found on 14.140 MHz long-path on most days around 0600 GMT, except when he's on the golf course!

OLD CALL - INFORMATION WANTED:

G1XCX has written to ask if anyone can help him trace the callsign of his Grandfather, James Malcolm Williamson, who lived in the Scunthorpe area. The only information available so far is that the callsign was probably a G2 prefix and that he was licenced up to the outbreak of the last war. Any further information would be very welcome and should be sent to:-

C.E.Thompson, G1XCX
101 Hillcroft Crescent
Oxhey
Watford WD1 4PA

REWIND FOR AR-30 ROTATOR:

Alan, G3MBL has a problem in trying to get his AR-30 rotator working again. Unfortunately, the resistance winding of the rotator unit's potentiometer (1,000 ohms) is open-circuit in two places. The resistance wire appears to be around 47 swg, 0.051 mm, and the potentiometer in the control unit seems to be identical in size and resistance. The part number from the Cornell-Dubilier Electronics manual is 50819-10, which also includes the copper wiper kit, but he believes that the company has now ceased trading. If anyone can help with a replacement part or a rewind, please contact:-

Alan G Edwards, G3MBL
32 Heldhaw Road
Bury St.Edmunds
Suffolk IP32 7ES

More of your requests for help and information next month, and please let us know about any responses to items printed in this column.

RSGB 75 AWARD

- only 3 months to go

The RSGB 75 Award is proving to be very popular indeed, with over two hundred applications having already been received. In case you haven't yet started collecting for the award, here is a reminder of the rules.

UK Amateurs & SWLs:

One contact made with any of the following stations -

GB75RS - throughout 1988
GB75HQ - July 1988
GB75AC - 9-17 July 1988
GB75ER - 9-17 July 1988
or 10 other GB75 calls...

...plus contacts with a total of 75 different RSGB members.

Overseas Amateurs & SWLs:

A total of 75 points made up from the following -

GB75RS - 10 points
GB75HQ - 15 points
GB75AC - 15 points
GB75ER - 15 points
Other GB75 calls - 5 points
RSGB members - 1 point

All contacts must have been made between 1 January and 31 December 1988 on any band using any mode including satellites but must NOT include any duplicate contacts, contacts via packet radio or contacts via repeaters. Short wave listeners in both categories can apply for the award on a "stations heard" basis.

When you have the required number of contacts or points, you should send a certified log entry (QSL cards not required), to:-

Mr John Harvey, G4IIV
RSGB 75 Award Manager
38 Bodenham Road
Northfield
Birmingham B31 5DS
England

Claims must be postmarked no later than 1 April 1989 and be accompanied by a cheque or postal order for £1.50, made out to "RSGB", to cover postage and packing (10 IRCs for overseas applicants). There is NO charge for the award itself.

NOTE: Those who have submitted logs and have met the requirements of the award should receive a certificate by Christmas.



The Squarebashers invade Gibraltar

by
Tim Kirby
G4VXE

As promised, we have great pleasure in bringing you the full and unexpurgated story of one of the most popular and well-received VHF DXpeditions ever mounted. As we outlined in an earlier Bulletin piece, the Squarebashers took to Gibraltar this year - they were in residence for a week early in June, and at the end of it hardened European VHF DX-chasers were unanimously agreeing that they'd never heard anything like it. They'd barely got off the aircraft bringing them home when we were there to persuade them to write up the story for the Bulletin - and here it is. Should bring back happy memories to those who worked them - and to those who didn't, like your Editor, it may bring wailing and gnashing of teeth!

An early Christmas Quiz question for you. What is it that turns holiday couriers pale, induces Spanish air traffic controllers to strike and creates apoplexy amongst Customs officers? Is it an invasion by the hordes of Attila the Hun? The Russians? Martians? Football hooligans? If you thought it was any of those, score zero points and replace your LDF5-50 feeder with UR43 as a penalty. The correct answer is, of course, "The Squarebashers".

If you'd like to know the answers to questions like "who was signing GW***/EA9/BY from a Chinese restaurant in North Africa", "what is a Derbyshire Curry" and "how do the Spanish tune amplifiers?", read on! Basically, it all started last

year, with our general disgust and fed-up-ness at the British weather which inevitably accompanied our previous DXpeditions. The question which was posed amidst the prevailing depression was "where's rare, hot, won't bankrupt us and has intelligible currency?" The answer which duly emerged was Gibraltar, from which the only VHF activity is occasional sporadic operation by Jimmy, ZB2BL.

A reconnaissance party consisting of Chris, G8TFI, Tim, G4VXE and the Daves, G8ROU and G4FRE, made a visit last October, and their experiences were recounted in the May edition of the Bulletin. It was concluded that a successful expedition could indeed be mounted but that about ten operators would be required to do the job properly and allow a little sunbathing in between operating stints! By the end of the year a crew had assembled itself - it comprised Walt, GW3NYY, Jon, GW4LXO, Kelvin, GW4TTU, Richard, GW8TVX, Dave, G4FRE, Tim, G4VXE and Chris, G8TFI. All these were seasoned Squarebashers. They were to be supplemented for the occasion by John, G4HGT and Dave, G8ROU of the Derbyshire Hills Contest Group, along with a new recruit, Colin, G0DAZ.

A planning meeting at Christmas (well, that was the excuse!) identified the main targets as 5C, 70 and 144 MHz together with some HF. It was recognised from the outset that weight would be a critical factor, and it was therefore decided that transistor equipment would be used for all bands except 144 MHz. Colin 'DAZ

volunteered to arrange the loan of equipment from various suppliers and Chris 'TFI was to organise travel and accommodation. The best timing was taken to be the beginning of June, in order to take advantage of what we hoped would be the prevailing Sporadic E conditions.

Things seemed to progress fairly smoothly from then on, although Chris had some problems finding a tour operator who could book us into the hotel we wanted at the time we wanted. Eventually we were booked with Intasun. Chris also obtained authorisation from the hotel to erect the antennas and ensured that we got the apartments with the best take-off! DXpeditions on this scale tend to be expensive and the finance can get messy, so we decided to open a separate bank account in the name of "The Squarebashers" - the bank didn't even blink! Eventually over £3,000 was to pass through this account - and that was just to get there....

The end of May duly arrived and final travelling plans were made. The "Welsh Contingent" hired a car and travelled down to Gatwick the night before the flight; the remainder of the group assembled in Gloucestershire, retiring to a pub in the approved Squarebashers tradition before retiring for the night. At this stage the first real problem reared its head. Because of some last-minute business circumstances requiring his attention, Colin 'DAZ was not able to go to Gibraltar with the main

party; he planned to resolve these and fly out to join us as soon as possible. He only envisaged a day or two's delay, but, astonishing as it may seem, he was unable to get a flight to Gibraltar despite making something over 70 phone calls. Sadly, therefore, Colin was to miss the expedition, which was most regrettable especially since he had put a tremendous amount into the organisation of it - quite how he obtained the loan of as much equipment as he did remains to this day a mystery! By way of a consolation prize, Colin was the first station we worked on 144 MHz - but more of that later.

The plan was for everyone to rise at 0500 and meet up on the A40 - this was fine except that Tim 'VXE' habitually starts from cold in the morning to the sound of a radio alarm clock tuned to Radio 1. He forgot (we all forgot) that Radio 1 isn't on the air at that ungodly hour, so the alarm didn't wake him! Fortunately the white noise or Radio Tirana or whatever is on the frequency at that time of day woke him up about twenty minutes later, so he was in time to join the Derbyshire Hills crew for a quick toast and coffee. We all then set off to meet up with Chris and Dave on the A40 - which we duly did. The general impression was that Chris' car was getting towards the point of being overloaded. Apart from Chris it contained antennas, personal baggage and "The Trunk". This sinister-looking item contained amplifiers, cables, feeders, granny - you name it, it was in there.

On the way to Gatwick the skies opened and we reflected that going abroad had to be a good decision, even if we worked three stations in the entire week. Having unloaded all the equipment (and probably ruining a number of airport trolleys in the process) we endeavoured to locate the "Welsh Contingent" - which should have been a simple operation since someone wandering around carrying an aluminium antenna mast was not likely to be inconspicuous. Eventually we found them and there was then a general procession to the check-in desk. "The Trunk" weighed in at 56 kg and was far too large for the normal baggage conveyor, so - along with all the masts and antennas - it was labelled up and dumped in a trolley. We wondered whether we'd ever see it again; what was the old joke about "Breakfast in London, dinner in New York, luggage in Tokyo"?

The next interesting task was to get the rigs on to the aircraft in our cabin baggage. As might have been expected, this proposal

aroused the interest of the security people and led to most of the baggage being opened for inspection. We had to laugh at the way in which Dave 'FRE's FT726 escaped this fate; it was dismissed at a glance by the security officer with a muttered comment of "video"! Eventually we got on to the aircraft and safely stowed the gear; the flight itself passed enjoyably and uneventfully, giving us spectacular views of Spain.

We duly landed in Gibraltar and found that all the baggage had made it safely - well done, Air Europe! We did make one small miscalculation, though. We forgot that the normal airport baggage reclaim "carousel" was emphatically not designed for items shaped like amateur radio antennas or their supporting poles, and the resulting chaos is best left to your imagination. We finally got things sorted out and, since we couldn't expect to be taken for ordinary tourists given the amount of stuff we were carrying, we made our way towards the Red Channel of Customs.

Perhaps not surprisingly, the Customs officer nearly had a fit when he saw the heap of equipment blocking the aisle up and creating mayhem in the area. There seemed to be an urgent operational requirement for a spokesman; Tim 'VXE' drew the short straw and was pushed forward to the front to do the explaining. He tried to look confident, as though an invasion of Gibraltar by strange Britons carrying peculiar electronic bits and pieces should be treated as an everyday event of no significance whatsoever. This strategy patently didn't work, since he was led away "to answer some questions"! We waited with bated breath, but fortunately the "interrogation" turned out to be very civil. Copies were taken of our licence details and we were sent on our way with best wishes for a good holiday and a request to report on leaving the country.

Have you ever been on a packaged holiday? Do you remember how tour couriers are usually female, glib, cool and unflappable? Well, the Squarebushers did cause a tremor in the "flappability" - in our case it even caused the removal of the ever-present sunglasses as she wondered how on earth all our gear and "The Trunk" would fit on to the courtesy bus. Fortunately for the equanimity of all of us, it did. On the way to our hotel we were able to admire the extensive military HF antenna systems on and around the Rock. Some of their dipoles run from the top of the Rock (some 1,400 ft asl) down to

sea level - we did consider asking the RAF whether we could scrounge them for a quick bit of LF operation but thought better of it. Oh well - eat your hearts out, low-band DX types, and don't go to Gibraltar unless you want to turn green with envy.

Soon we were on our way up to our rooms, which with all the equipment and "The Trunk" wasn't especially easy. Time for a rest, you might think? No way! Jon and Tim immediately started assembling the 3-element MET for 50 MHz and the 144 and 70 MHz Yagis soon followed. Dave 'ROU' was volunteered to organise the masting. This always happens and may well have something to do with his height and build - he can pass for a mast himself at a pinch! Erecting a mast on a hotel balcony is not an easy proposition but eventually a three-point guying system was improvised with one set of guys being tied to our balcony, another set to the balcony above and a third set around the top of a lamp-post on the path below.



Amidst mounting excitement, a feeder was attached to the 50 MHz beam and fed in through the window. Now to check the SWR. FT726 to 50.165, flick to Tune, back off the drive a bit, transmit: oh dear, 3 to 1! Back to receive, but what's this? Bill, G2ANT calling at 599. Quick, where's the mic? Can't find it, where's the key? Aaargh, can't find that either.....

Did we work him? Find out next month - oh, and we also answer the question "why was a waiter wrestling with a Seagull on the balcony?"..... Stay tuned!

Talking Point

Radio Amateurs' Examination

The syllabus of the RAE is constantly being reviewed, and from time to time is revised. The Advisory Group carrying out this scrutiny includes representatives from the DTI, the RSGB, C & G, electrical and electronic organisations and various educational bodies. Most of these representatives are also licensed radio amateurs.

A revised RAE syllabus has now been produced, and will first be examined in May 1989. Much of its content remains unchanged. The major addition is a new section on electromagnetic compatibility (EMC), introduced at the behest of the DTI. It deals with the following:

- EMC problems likely to occur when an amateur station is operated in close proximity to other equipment
- Equipment in an amateur station capable of generating interference
- Interfering signal paths
- Methods of improving the immunity of affected equipment
- Improving station design
- Method of approach when investigating EMC problems

Note that a very helpful booklet entitled "How to improve television and radio reception" is available free from all main post offices.

To compensate for the addition of this EMC section, there have been reductions in the content of some other sections.

The RAE will continue to consist of two separate papers. Paper I will deal with licensing conditions, transmitter interference and EMC: questions on licensing conditions will be based on the new amateur radio licence which comes into effect on 1 January 1989 (see recent Bulletins - Ed). Paper I will be of 1.25 hours' duration, made up as in table 1.

Paper II will deal with operating procedures, practices & theory; it will be of 1.5 hours' duration, made up as in table 2.

Table 1

Syllabus topics	Number of questions
1. Licensing conditions	15
2. Transmitter interference	15
3. EMC	15

TOTAL	45

Table 2

Syllabus topics	Number of questions
1. Operating procedures and practices	9
2. Electrical theory	6
3. Solid-state devices	7
4. Receivers	7
5. Transmitters	8
6. Propagation and antennas	9
7. Measurements	9

TOTAL	55

There will be a break of 15 minutes between the two papers. As in previous years, the questions will be multiple-choice.

The following revised publications will be available shortly;

- "How to become a Radio Amateur" - free from the Radio Amateur Licensing Unit, Chetwynd House, Chesterfield, Derbyshire S49 1PF
- "Radio Amateur's Examination Manual" - from RSGB
- "765 Radio Amateur's Syllabus" (£1.80) and "Specimen RAE Questions" (£1.70), both from City & Guilds of London Institute, 46 Britannia Street, London WC1X 9RG.

NOTE:

*The new edition of the
"RAE Manual"
should be available
by the end of
October*

RSGB MIDLANDS VHF CONVENTION

Sunday 9 October, at 11am

Lecture Programme starts 1.45pm

"Short Review of 23cm Techniques"
by F T Smith, G6FK

"9600 baud Packet Radio Modems"
by J Miller, G3RUH

"VHF DXpedition to Gibraltar"
by T Kirby, G4VXE

Repeater Forum by RMG

RSGB VHF Awards

Demonstration of computerised
Yagi design

Packet radio demonstration

VHF Forum at 5.15pm

* Trade Show *

* Bring & Buy Stall *

* Bookstall *

Signposted from junction 4 of M54
Talk-in on S22

Evening Buffet - limited tickets

Details: J P H Burden, G3UBX

Events Diary

CLUB NEWS

In an attempt to reduce the number of pages previously used for Club News, we are using a more abbreviated format listing clubs alphabetically under counties and giving the date and subject of the meeting. As in GB2RS, matter nights and committee meetings are not listed. The full details of when and where clubs meet, the frequency of meetings, the contact person and telephone number will be published twice yearly, in the UK Callbook and Radio Communication. However, any changes to these details or details of any new clubs, will be included in the list below. If news is received by the published deadline, it will appear in this listing. It is your responsibility to ensure that items are sent to HQ in good time, either direct or via your RLO. News items should be sent in writing, preferably typed or written legibly, and be signed by the club secretary or the person responsible for publicity.

NOTE: Many regular contributors to 'Club News' do not appear this month. We suspect that their news items may have been held up during the postal strike which hit all areas of the UK around the time that the column was being prepared. We apologise to those clubs whose news input was affected by the strike and look forward to receiving up-dated programmes of events from them as soon as possible. Please remember, it helps us if you can send a list of your forthcoming events which we can hold on file for use each month.

Co ANTRIM:
* Ballymena Radio Club - 6, AGM.

AVON:
* Bath & DARC - 12, video evening; 26, constructors competition.
* Bristol RSCB Group - 31, AGM.
* North Bristol ARC - 14, HF activity night; 21, talk by DTI; 28, magazine swap night, 29 coach trip to Leicester AR Show.
* South Bristol ARC - 5, computer software and book exchange; 12, home brew equipment display; 19, video night; 26, activity night.
* Thornbury & DARC - 1/2, exhibition station at Gidbury Nuclear Power Station; 11, talk "Valves".
* Weston-super-Mare ARC - 3, talk "More of my Travels" by G4KMB; 17, constructors night.

BEDFORDSHIRE:
* Shofford & DARC - 6, talk "History of Communications" by John, G4KJJ, RSCB RLO plus discussion on 'Student' Licence proposals; 13, junk sale; 20, surprise evening.

BORDERS:
* Border ARC - *ADDRESS CHANGE FOR SECRETARY* Mrs M Bottomley, CH11RN, 1 Greenside Cottages, Ladykirk, Berwickshire.

BUCKINGHAMSHIRE:
* Burnham Beeches RC - 3, operating and open evening; 17, "Amateur Radio in Space".

CLWYO:
* Alyn & Oeside ARC - 11, talk "Signalling Before the Black Box" by John G43IT.
* Conwy Valley ARC - *NEW SECRETARY* Norman G4KGI tel: 0745-823674. Meets 7.30pm at the Edelwlass Hotel, Colwyn Bay. 6, junk sale.

CUMBERIA:
* South Lakeland ARC - 11, HF operating at Boudals.

DEVON:
* Exeter ARC - 10, AGM.
* Torbay ARC - 25, talk "Transistors - Their Manufacture" by Lawrence G4HTD.

EAST SUSSEX:
* Southdown ARC - 9, fun run.

ESSEX:
* Braintree & DARS - 3, construction evening; 17, talk "Kites 'n' Aerials" by Tony G11bey, G4YTC.
* Loughton & DARS - 21, talk "Cellular Radio Update" by David Thorpe, G4FKI.
* Southend & DRS - 7, talk "Microwave Dvns" by Bernio, G0ENN; 14, talk "Diving and Underwater Exploration" by Mr. G.K.L. Cousins; 21, talk "Lightning, the Origins and Consequences" by Mr. Allan Martindale.

GREATER LONDON:
* Acton, Brentford & Chiswick ARC - 18, reports of members' holiday activities.
* Clifton ARS - *NEW VENUE* The Duke of Albany public house, junction of Cellatly Road, Kitto Road & Drakefield Road, New Cross, London SE14.
* Harrow ARS - *NEW VENUE* Harrow Arts Centre, Uxbridge Rd, Hatch End, 7, activities; 14, C2UV contest; 21, activities.
* Wimbledon & DARS - 14, AGM; 28, talk "Weather Satellites" by Steve Cook G8CYE.

GREATER MANCHESTER:
* Eccles & DARS - 4, talk "Amateur Radio pre-1914" by G8VF.
* South Manchester RC - 14, "Adventures & Misadventures in Eastern Europe" by Les Seddon, G3YIW; 28, Halloween DF contest.

HAMPSHIRE:
* Basingstoke ARC - 3, AGM.
* Fareham & DARC - *NEW SECRETARY* Bob Reeves, G8VOI.
* Farnborough & DARS - 12, on the air; 26, surplus equipment sale.
* Horndean & DARC - 6, AGM.
* Itchen Valley ARC - 14, preparation for JOTA; 28, talk "More Bottles" by G2HMI.
* Southampton ARC - *NEW SECRETARY* CIVCA tel: 0703-554900; 19, junk sale.
* South West Hants Raynet - 21, AGM.
* Three Counties ARC - 26, talk "Amateur Television" by Andy Mearns, G3UEO.
* Victory Contest Group - *NEW* meets occasionally at the Red Lion, Southwick nr Portsmouth. Details Chris tel: Emsworth 374283.
* Waterside SWRC - *NEW SECRETARY* Roy Palmer, G3YJJ tel: 0703-894200. Meets at Blackfield Community Centre.

HEREFORD & WORCESTER:
* Bromsgrove ARS - *NEW SECRETARY* G4OHJ tel: 0789-773286; 11, night on the air; 25, talk "Clandestine Radio" by G3BA.
* Bromsgrove & DARC - *NEW VENUE* The Grasshopper public house, Stoke Meath, South Bromsgrove at 8pm. 14, talk "Antennas" by Dennis G3YKO; 15/16, JOTA GB2RUB plus barbecue.
* Hereford ARS - 21, talk "Slow Scan TV" by G3CPG. (This meeting at Three Counties Training Centre, Cattle Market, Hereford).
* Molvern Hills ARC - 11, talk "Radio Control" by Jim Davy.
* Vale of Evesham RAC - 6, slide show on G0EMS and G0JNS visit to USA.
* Wythall RC - 11, construction night; 18, talk "Clandestine Radio" by G3BA; 25, night on air.

HERTFORDSHIRE:
* Cheshunt & DARC - 5, Reviewing, and Lock of VHF Activity by Angus McKenzie, G3OSS; 19, equipment evening, testing.
* Stevenage & DARS - 4, construction evening, test equipment.
* Verulam ARC - 25, talk "70cm NBFM Transmitters" by Robin G3TOR.
* Welwyn-Hatfield ARC 17, construction demo.

HUMBERSIDE:
* Coole R&ES - 14, video evening; 21, HF on air; 28, social (Black Swan).

ISLE OF MAN:
* Isle of Man ARC - *NEW* meets 8pm at Howstrake Hotel, Harbour Road, Onchan, IoM. Details G4GQO tel: 0624-22295.

KENT:
* Bredhurst R & TS - 13, G4ECH Ingenuity Trophy; 27, visit by G3HCK.
* Darenth Valley RS - 12, SSTV demonstration by G1JEC; 26, surplus equipment sale.
* East Kent RS - 6, AGM plus construction contest.
* SE Kent (YMCA) ARC - 12, talk by Tony, G4IMP; 26, club winter project discussion.

LANCASHIRE:
* Bury RS - 11, construction competition.
* East Lancs ARC - 4, illustrated talk "Tornado Fighter Aircraft".
* Fylde ARS - 4, talk "Computers - What's on the Horizon" by S. Williamson, G3WQU.
* Thornton Cleveleys ARS - 3, construction competition; 17, AGM; 31, video "The Trials of Field Day" by G1TXV.
* Wigan & DARC - *NEW VENUE* Tuesdays 8pm at Jippings Arms, Poolstock Lane, Wigan, tel: C00TY 0942-47416.
* Wyre ARS - 12, pie & peas social night; 15/16, GB4FS Fleetwood scouts JOTA stn; 26, talk "Horse Wrestling" by John G0AJW.

LEICESTER:
* Leicester RS - 3, quarterly progress; 10,

HF/VHF activity night; 24, final preparations for Leicester AR Exhibition; 31, RSCB video.

LINCOLNSHIRE:
* RAF Waddington ARC - *REFORMED* meets Tuesdays 7pm at Newell House, RAF Waddington. Details Phil Gray tel: Coningsby 42581 ext 315 or Dave Bloomfield tel: Coningsby 42581 ext 760.

MERSEYSIDE:
* Liverpool & DARS - 4, AGM; 25, Isle of Man Inquest on SSB NFD.
* St. Helens & DARC - *NEW SECRETARY* Carol Walnwright, G0CXX tel: 0744-813589.
* Wirral & DARC - 12, Chairman's night; 26, club home-brew competition.

NORFOLK:
* Norfolk ARC - *NEW SECRETARY* Craig Joly G0BCD. 12, "Norwich City planning" by Ray Sewell, Planning Officer; 26, "PSE OSL OM" members' favourite or unusual OSLs.

NORTH YORKSHIRE:
* York RC - 5, Royal Observer Corps; 19, 10GHz (Andy G0CXX Suter); 26, C1-4VRC on air.

NOTTINGHAMSHIRE:
* Worksop ARS - 11, junk sale; 25, AGM.

OXFORDSHIRE:
* Banbury ARS - *NEW VENUE* 2nd/4th Wednesdays 7.30pm at the Three Pigeons, Castle Street, Banbury. Details G1110 tel: 0295-51774.
* Vale of White Horse ARS - 4, junk sale.

POWYS:
* South Powys ARC - 4, demonstration of RTTY/"Mailbox".

SHROPSHIRE:
* Solop ARS - 7, grand jubilee dinner; 13, "Basic Video Circuitry" by G0CTN; 20, AGM; 27, HF Special event on air.
* Telford & DARS - 5, construction project; 12, talk "Proper Plug Plumbing" by G6UDX; 19, constructors' evening; 26, guest speaker.

SOMERSET:
* Mid-Somerset ARC - 7, talk "Crime Prevention" by local police. 21, open evening.
* Yeovil ARC - 6, "Blasting the Bipolar Transistor" by G3MYH; 13 "ORP on SSMH" by G3MYH; 20, "How the 2-Hatch Works" by G3MYH.

SOUTH YORKSHIRE:
* Sheffield ARC - 3, quiz v Wakefield ARS; 10, talk "Feeding Antennas" by G8ACN; 17, junk sale; 24, AGM.

SUFFOLK:
* Felixstowe & DARS - 3, visit - Felixstowe Docks; 17, social; 31, talk "East Suffolk's New Oligopeptide" by John Sager, G8ONH.
* Ipswich RC - *NEW VENUE* Red Lion, Bramford Road, Ipswich; 12, talk by John Greenwell G3AEZ, RSCB Council member; 26, illustrated talk "Early Days of Broadcasting" by Tim G6GUX.

SURREY:
* Dorking & DARS - 11, "Shortwave Listening" G6ZOV.
* Kingston & DARS - 19, "Fast Scan TV" by John Stockley, G8MNY.

WARWICKSHIRE:
* Mid-Warwickshire ARS - 11, "Clandestine radio on the Burma-Siam railroad" G3BA.
* Rugby ARS - 11, activity night; 18, talk/demo "Weather Satellites" by Dave Young, G8VAB.

WEST GLAMORGAN:
* Swansea ARS - 29, coach trip to Leicester show, details G4KSH tel: 0792-404422 or G0QBQ tel: 0792-818100.

WEST MIDLANDS:
* Midlands ARS - 18, AGM.
* South Birmingham RS - 5, discussion on proposed Novlec/Student Licence, Alan Bennett, G4VYN.
* Wolverhampton ARS -
* Worsley RC - 13, VHF-UHF activity night; 27, "Fire Safety" by John Howells.

WEST SUSSEX:
* Horsham ARC - 6, Autumn junk sale.
* Mid-Sussex ARS - 13, junk sale and bring & buy; 20, talk; 27, outside visit.

WEST YORKSHIRE:
* Halifax & DARS - 18, "Observing Sporadic E", Ron G3OTE.
* Keighley ARS - 15/16 East Riddlesden Hall Special Event Station; 25, junk sale.

Events Diary

- * North Wakefield RC - 6, rally meeting; 13, an the air.
- * Pontefract & DARS - 6, "RSCB" by local RLD; 70, talk "Satellite TV" by Richard, G4FBA; 27, on the air.
- * Spen Valley ARS - 6, surplus sale; 20, an evening with Jim Fish, G4MH.
- * Todmorden & DARS - 3, surplus equipment sale.
- * Wakefield & DARS - 3, Inter club quiz at Sheffield ARC; 4, practice evening; 11, members' home-construction display; 15, jubilee sale; 18 on air VHF contest; 25, R/g testing with GOCDA.

WILTSHIRE:

- * Chippanham & DARC - *NEW SECRETARY*
- J Barrington G4ZUV.

DEADLINE - Items for inclusion in the NOVEMBER issue must be sent to HQ marked "Club News - Bulletin", and be received by Wednesday 21 SEPTEMBER latest.

MOBILE RALLIES

This is a list of all rallies, exhibitions and conventions notified to HQ (as at press date). Items are given in detail for the next three months inclusive and in brief thereafter. Please send detailed information, including contact call sign and telephone numbers direct to HQ and marked "Bulletin".

2 OCTOBER

- * Great Lumley AR & ES Rally - Community Centre, Great Lumley, Chester-le-Street, Co. Durham. Opens at 11 with earlier access for disabled. Usual trade stands and attractions, talk-in on S22. Details John Kaarney, G10KA tel: 091-388 6000 (home) or 091-477 4522 (office).
- * 4th North Wakefield RC Rally - Outwood Grange School, Patavens Lane, Outwood, Wakefield. pens at 11am (10.30am for disabled). Traders, raffish, refreshments etc. Free entry. Talk-in on S22 and via G3WU. Details Steve, G4RCH (OTHR).
- * Welsh Amateurs Radio Convention - Dardale Community College, Blackwood, Gwent. Opens 10am, official opening by RSCB President Sir Richard Davies, KCVO, G2MH at 11am. Usual traders, RSCB stand, bring & buy stall, refreshments etc. Lectures and other features. Details B. Davies G4KXA, tel: 0495-225625.

9 OCTOBER

- * Midlands VHF Convention - *CHANGE OF DATE* Hadley Court Centre, Hadley Court, Telford. Opens at 10am, usual features and attractions. Talk-in at 2 metres. Details and Buffet ticket enquiries to Peter G3UBX tel: 0902-763434.
- * Armagh Rally - Drumsill House Hotel, Armagh. Usual traders and attractions. Details G18RNX.

16 OCTOBER

- * Eltham '88 - Floral Hall, Harnscoe, Yorks. Opens 11am, usual traders, bring & buy, demonstrations, local club stands, refreshments & bar. Close to sea-front, Patles and here so good for the whole family. Ample parking and talk-in on S22 by G4EY. Details G3TET tel: 0964-532588.

28/29 OCTOBER

- * Leicester Amateur Radio Show - Cranby Halls, Leicester. Usual large trade show and bring & buy stall, *RSCB Stand*, good refreshment and bar facilities. Easy access from M1 motorway via A46. Close to British Rail station and City Centre. Details Frank tel: 0533-553293.

30 OCTOBER

- * Carmarthen ARS Exhibition & Rally - Lelura Centre, Johnstown, Carmarthen. Opens 10.30am, usual trade stands, bring & buy, celeria, bar, swimming pool. Talk-in on S22. Details G4JCE, tel: 026 783 460.

5 NOVEMBER

- * 8th North Devon Radio Rally - Bradworthy Hall, near Holworthy. Opens 10.30am, bring & buy stall. Talk-in on S22. Details G8MXI (OTHR).

5/6 NOVEMBER

- * North Wales Radio Rally - Canollian Abercony CanLry, Llandudno. Trade stands and other attractions. Details Tony Wilkinson G4PVU, tel: 0492-49121 or 75666.

13 NOVEMBER

- * Bishop Auckland Radio Rally - The Civic Hall, Shildon, Co. Durham. *NEW VENUE* Trade stands, bring & buy stall, refreshments & bar, talk-in on S22. Details Morris G4OHZ, tel: 0325-311645.
- * West Kent ARS Tonbridge Rally - Angel Centre, Tonbridge. Opens at 10.30am, usual traders, bring & buy, refreshments. Talk-in on S22, SUB and 10m FM by G8QKS. Details Nigel G4KIU.

- tel: 0892-515321 or 515432.
- * West Middlesbrough RC Winter Rally - Baltan Sports & Leisure Centre, Silverwell Street, Bolton. Usual traders and attractions. Details David G1100, tel: 0204-24104, evenings.

20 NOVEMBER

- * Bridgend & DARC Rally - Bridgend Recreation Centre, Angel Street, Bridgend, Mid-Glamorgan. Opens at 11am (10.30am for disabled), usual traders and attractions, bar, improved refreshment facilities, free parking, Morse tests (MUST be booked with RSCB in advance), talk-in on S22. Details Mike G4XCC, tel: 0656-724041.

27 NOVEMBER

- * Varulam ARC Christmas Rally - St. Albans City Hall. Details G4JCS tel: St. Albans 59318. Trade - Watford 52959.

11 DECEMBER (PROVISIONAL)

- * Leeds & DARS Christmas Rally - Pudsey Civic Centre, Dawson's Garner, Pudsey, nr Leeds. Details Harry G4WTD, tel: 0274-685039.

IN BRIEF - More details later.

1989 RALLIES

22 JANUARY

- * Oldham Mobile Rally - Queen Elizabeth Hall, Civic Centre, Oldham. Details Kathy G4ZEP tel: 061-624 7354.

29 JANUARY

- * MARS Rally - Horbreck Castle, Blackpool. Details Peter G6CCE, tel: 051-630 5790.

25 FEBRUARY

- * Reilham Radio Rally - Parkwood Community Centre, Deanwood Drive, Reilham, Cillingham, Kent. Details Bob, G1LXE tel: 0634-362154.

12 MARCH

- * Trafford Rally - *NEW VENUE* The G-MEX Centre, Manchester. Details Graham G1JKJ tel: 061-748 9804.

- * Pontefract & DARS 9th Annual Components Fair - Details Callin G4AAD tel: 0977-43101.

2 APRIL

- * White Rose Rally - Leeds University. Details A.S. Kessler, G4OXA, PO Box 73, Leeds, LS1 5AR.
- * Southend & District Mobile Rally - Roachway Youth Centre, Rachard, Essex. Details Ted G4TUD tel: 0702-202129.

14 MAY

- * Dreyton Menor Mobile Radio Rally - Dreyton Manor Park, Temwarth, Steffs. Details Wern G8BHE, tel: 021-422 9767.

21 MAY

- * 32nd Northern Mobile Rally - Great Yorkshire Showground, Hemphel, North Yorkshire. Details Harry G3C00.

28 MAY

- * 6th Anglo-Scottish Rally - Telt Hill, Kelsa. Details Bruce, G4U1R.

29 MAY

- * Doncaster Radio Rally - Bircoates Sports Centre, near Bantry, Doncaster. Details Audrey Wilson tel: 0302-721259.

11 JUNE

- * Elveston Castle Mobile Rally - Elveston Country Park near Derby. Details John G4PYZ tel: 0332-767994. Trade Peter G3WPU tel: 0332-700265 evenings.

2 JULY

- * Pontefract Recreance Rally & Fair - Details Callin G4AAD tel: 0977-43101.

8/9 JULY (PROVISIONAL)

- * 2nd RSCB DATA SYMPOSIUM - Harrow School, north west London. Further details later from RSCB.

29/30 JULY

- * 4th AMSAT-UK Colloquium - University of Surrey, Guildford. Details G3AAJ tel: 01-989 6741.

OTHER EVENTS

9 OCTOBER

- * COMPUTERATIONS '88 - 4th annual computer/ham radio exhibition at Millhead campsite, Dartmouth Road, Brixham, Devon. Opens at 10am, amateur radio and computer trade stands, bring & buy, car boot sale (weather permitting), raffle, celeria, bar, ample carparking, overnight camping, special event station G8CPU. Talk-in on S22 by G4SSD. Details P West tel: 0803-522216.

10 DECEMBER

- * RSCB ANNUAL GENERAL MEETING - University of Manchester Institute of Science & Technology.

GB CALLS

The list below shows ALL the special event stations licensed for operation during June and early July (see et press date)

It is taken direct from the GB Calls file on the HQ computer. These call signs are valid for use from the date given but the period of operation may vary from 1 to 28 days.

PLEASE NOTE: This month we have been forced to abbreviate the GB calls information to date, call sign and location once again because of a shortage of space.

ALL "CB75" PREFIX CALL SIGNS
VALID FOR RSCB 75 AWARD

THROUGHOUT 1988:

- GB75RS - 75 (ANNIVERSARY) RADIO SOCIETY (GB);
- RSCB HQ, Lamba House, Poltars Bar.

1 OCTOBER

- GB00DE - Eart Purbrook, Hants.
- GB00DN - Crld: S2 295 849
- GB00OG - Cloncreig, Ayrshire.
- GB00WG - East Wickham.
- GB1FCB - Walsall, W.Mids.
- GB2BVS - Crld: S0 982 711
- GB2EVS - Crld: T0 578 091
- GB2MAR - Parthchester Community School, Hants.
- GB2VSW - Summit of Helvellyn
- GB4CPU - Hill Head, Devon.
- GB4HS - Hacclosfield, Cheshire.
- GB4XXX - Oxpedition to North Wales.
- GB50X - Merth Hill, Darley.
- GB5RAF - telecaster.
- GB5CSR - Civil Service RS., London SW1.
- GB5FSW - Stratford-upon-Avon.
- GB5IBM - IBM North Harbaur, Hants.
- GB5OLD - Oldbury Nuclear Power Station, Bristol.
- GB5SFA - Cullford Sports Centre.
- GB5SPF - Surrey Police Sports Field, Cullford.
- GB5SRC - Sandwell ARC, Warley.
- GB5WFS - Stratford-upon-Avon.
- GB5WV - Kent.
- GB5WRR - Ampleforth College, N.Yorks.
- GB6CRJ - Coventry Scout HQ.
- GB6NKS - Hacclosfield, Cheshire.
- GB6RRS - Baltan, Lancs.

2 OCTOBER

- GB6COW - Eart Midlay, Hants.
- GB6BUS - W.Yorks Transport Museum, Bradford.
- GB6NVS - Venture Scout Campsite, Harwich.
- GB6KGC - Old Warden Aerodrome, Beds.
- GB7SFX - Kingshorpe Community Centre, Northants.
- GB6HC - Mayfield Centre, Hacclosfield.

3 OCTOBER

- GB2UER - Brunel University, Middx.
- GB6TIC - Imperial College, London SW7.
- GB7SIC - Imperial College, London SW7.

4 OCTOBER

- GB0BS - Bearded Scout HQ, Dumbartanshire.
- GB0COW - Crld: S2 339 879

5 OCTOBER

- GB6MR - Mull Rally, Isle of Mull.

6 OCTOBER

- GB4BRS - Border RS, Berwick-on-Tweed.

7 OCTOBER

- GB0COS - Crld: SU 628 069
- GB1COS - Crld: SU 628 069
- GB4WRI - McRoberts Pavilion Grounds, Edinburgh.
- GB6HF - Kepler Hall, Tync & Wear.

8 OCTOBER

- CB4SBS - Stamford Bridge Scout Hall, York.
- GB601 - Robin Woods Centre, W.Mids.

10 OCTOBER

- GB4GCC - Graydon College.
- GB400T - Tamworth, Staffs.
- GB7SMR - Patti Pavilion, Swansea.
- GB7SYR - RAFA HQ, St. Albans.

11 OCTOBER

- GB7SUA - Darley ARC, Harragata.

12 OCTOBER

- GB7SIS - Brockworth Infant School, Glac.

13 OCTOBER

- GB2COW - Crld: S2 627 588
- GB4TS - BT Caryon, Cardiff.
- GB7SIVR - Chandlers Ford, Hants.

14 OCTOBER

- GB2RCC - Crld: SP 402 671
- GB4BCP - Rockhesh Village Hall, Norwich.
- GB50Q - Paisley, Scotland.

Events Diary

15 OCTOBER

CB75ERN - East Riddlesden Hall, W.Yorks.

22 OCTOBER

CB2DX - Grid: SD 572 026
 CB5ORAF - RAF Farnborough, Hants.
 CB75FIN - Frensham Heights School, Surrey.
 CB8EAR - East Sussex.

23 OCTOBER

CB0NWR - North Wales Rally.

24 OCTOBER

CB1CQY - Grid: SU 617 001

27 OCTOBER

CB4ARR - Baltan, Lancs.
 CB75CH - Cronby Halls, Lancashire.

28 OCTOBER

CB5ORAF - Cranby Hall, Leicester.

29 OCTOBER

CB0ACF - 195 Co Army Cadet Force, Middlesex.
 CB1ACF - 195 Co Army Cadet Force, Middlesex.
 CB75BRS - Bluebell Railway, Uckfield, E.Sussex.
 CB8AER - Lancashire.

1 NOVEMBER

CB0CON - Grid: SZ 295 849
 CB0COP - Portchester Castle, Hants.
 CB0HOC - Macclesfield, Cheshire.
 CB1RCW - Reynot Group Wagon, Lancs.
 CB4CGS - Griffin School, Steffs.

2 NOVEMBER

CB75MBC - Mounts Bay, Penzance, Cornwall.

3 NOVEMBER

CB5HC - Horsham Club, Sussex.
 CB75BE - Brentwood, Essex.

PLEASE NOTE: JOTA stations are not listed in the CB Collis list since there are around 300 of them issued each year. However, if you would like a copy of the JOTA Special Event Stations List for this month's Jamboree On The Air, please send a large A4 first class stamped addressed envelope to the Membership Services Department at RSCD HQ as soon as possible, marking the envelope "JOTA List". Alternatively, a list can be collected from Headquarters.

RAE & CW Courses

Although most, if not all, of the courses listed below began last month it is still not too late to make enquiries if you wish to enroll for RAE or CW classes. Many courses are forced to close after a few weeks because of people dropping out and the numbers falling below a minimum. Late applicants may therefore save a class from having to close.

BANGOR (CODOWN)

* Bangor Technical College, Castle Park Road, Bangor. Mondays 7.30pm RAE Theory; Wednesdays 7.30pm RAE Operating Practice & CW Class. Details Jon Smyth tel: 0247-271254 ext 217.

BARKING (ESSEX)

* Barking Radio & Electronics Society. Mondays 7.30pm RAE; Tuesdays 7.30pm CW Class. Details Paul Gault tel: 01-553 1172.
 * Barking College of Technology, Oogenhom Road, Romford RM7 0XU. Thursdays 6.30pm RAE Theory. Details Dept of Technology tel: Romford 766841.

BRISTOL (AVON)

* Backwell School. RAE & CW classes. Details Nailsea FE Centre tel: Nailsea 853856.
 * Brunel Technical College, Ashley Down, Bristol. Mondays RAE Theory; Tuesdays CW Class; Thursdays RAE Practice. Details Dept of Aerospace & Communications Engineering tel: 0272-41241 ext 2164.
 * West Bristol Adult Education Area, Stoke Lodge, Shirehampton Road, Stoke Bishop, Bristol. Mondays 7pm CW Class; Wednesdays 7pm RAE. Details tel: 0272-683112.

BRISTON (Gtr. LONDON)

* Brixton College, Ferndale Road, London SW4. RAE Wednesdays 6.30pm. Details tel: 01-737 2323. External RAE candidates welcome.

CAMBERLEY (SURREY)

* Surrey Heath Adult Education Institute, Adult Education Centre, France Hill Drive, Camberley. Tuesdays RAE. Details tel: Camberley 20145/6.

CHINGFORD (LONDON E4)

* Friday Hill House, Simmans Lane, Chingford. Wednesdays 7.30pm RAE. Details tel: 01-529 3380.
 * Friday Hill House, Simmans Lane, Chingford. Mondays 7.30pm CW Class. Details Jan Langley CAPSY tel: 0992-15168.

CLACTON (ESSEX)

* Clacton Adult Education & Youth Centre, Green Lodge, 180 Old Road, Clacton-on-Sea, RAE. Details tel: Clacton-on-Sea 424151.

COLLINGALE (LONDON NW9)

* Hendon College, Garner Mead, Craham Park, Colindale, London NW9 5RA. Tuesdays 7.30pm RAE. Details tel: 01-200 8300. Also wide range of full & part-time electronics courses.

FAREHAM (HANTS)

* Fareham Adult Education Centre. Handays 7pm Marso Workshop, Starting 19 September, Thursdays 7pm short revision for December RAE. Details tel: Fareham 288139 air the Centre tel: Fareham 280709.

GUILDFORD (SURREY)

* Guildford College of Technology, Slake Park, Guildford, Surrey GU1 1E2. Mondays 6.30pm RAE. Details Brian Purse tel: 0483-31251.

HARWELL (OXON)

* Education & Training Centre, Harwell Laboratory, Mondays 7.30pm RAE. Details Colin Gasbrough G3NKG tel: 0367-20006.

HARWICH (ESSEX)

* Harwich Centre, Adult & Youth Education, Main Road, Dovercourt, Essex. RAE. Details al: Harwich 2467.

HECKMONDWICK (YORKS)

* Heckmondwike Grammar School. Mondays 7pm RAE. Details G3TEE tel: Leeds 554190.

KIDDERMINSTER (WORCS)

* Kidderminster College, Haa Road, Kidderminster. Mondays 7pm CW classes, Wednesdays 7pm RAE. Details D Oakley C00AA at college tel: Kidderminster 820811.

LINCOLN (Lincs)

* North Lincoln College, Lincoln Centre, Cathedral Street, Lincoln LN2 5HD. RAE & CW classes. Details Mr Richard Herriman, CSIP, Microwave Development Unit, tel: 0522-510530 ext 2550.

LIVERPOOL (MERSEYSIDE)

* Liverpool & OARS, Churchill Conservative Club, Church Road, Wavertree, Liverpool L5. Tuesdays 7pm RAE. Details Iutar Gordon G3OVH tel: 051-727 1685.

* Soudon College, Soudon Road, Liverpool L15 4JG. Tuesdays & Thursdays 6.30pm RAE & CW classes. Details Mr J G Loughlin, G4OKR tel: 051-733 7211 ext 333.

LOUGHBOROUGH (LEICS)

* Loughborough College, Rodmoor, Loughborough, Leics LE11 3BT. Tuesdays 6pm CW classes, 7pm RAE theory. Details tel: 0509-215831.

MANCHESTER

* Pendlebury High School, Cromwell Road, Swinton. Mondays 7.30pm RAE; Thursdays 7.30pm CW classes. Details Swinton Adult Education Centre tel: 061-794 5798.

ORPINGTON (KENT)

* Ramsden Girls School, Yntegel Road, Orpington, Kent. Thursdays 7.30pm RAE. Minimum of 12 required. Enrolment Bromley Adult Education Service, Aylesbury Road, Bromley or on first night. Details tel: 01-464 5745 or tutor Alton Betts G0HIQ tel: 0689-31123.

PADDINGTON (LONDON W2)

* Poddington College, Poddington Green, London W2 1NB. Tuesdays and Thursdays 6.30pm RAE. May be only IEA-sponsored RAE course, good numbers required if this course is to survive! Details tel: 01-402 6221 or David Pease C4KKM tel: 01-892 7585.

RUGELEY (STAFFS)

* Rugeley Adult Education Centre, Taylors Lane, Rugeley, Staffs. Thursdays 7pm RAE. Possibility of CW classes if minimum of 12 can be obtained. Details Iutar John Isaac, C4DBR tel: 08894-2912.

STOCKPORT (CHESHIRE)

* Avondale Evening Centre, Heethbank Road, Chadfield Heath, Stockport SK3 0UP. Mondays 7.15pm CW classes; Tuesdays 7.15pm RAE. Details tel: 061-477 2382 or Rik Whitaker tel: 061-427 4730.

* Raddish Vale Evening Centre, Reddish Vale Road, Stockport SK5 7HD. Mondays 7pm RAE, option to sit/result in December; Thursdays 7pm CW classes. Details tutor Dave Waad G4UJD tel: 061-480 9157.

WATFORD (HERTS)

* Watford College, Dept of Engineering & Science, Greatham Road DR Water Lane, Watford, RAE course. Details tel: 0923-57614 or 57611.

WELWYN GARDEN CITY (HERTS)

* De Havilland College, The Campus, Welwyn Garden City, Herts AL8 6AH. Thursdays 6.30pm RAE. Details tel: Welwyn Garden City 326318.

WYTHALL (WORCS)

* Wythall Radio Club, Wythall Park Community Centre, Silver Street, Wythall. Tuesdays 8.30pm CW classes; Thursdays 8.30pm RAE. Details Chris Pettitt G0EYO tel: 071-430 7267.

PS

*Come on, all you
 50/70 MHz homebrewers,
 where are you?
 We haven't exactly
 been overwhelmed with
 entries for the
 construction contest.
 Turn to p502 in July's
 RadCom and check out the
 details.
 Deadline for notifying us
 of intent to enter is
 1 November 1988,
 so you'll have to get
 cracking.*

*Amazing 144 MHz tropo
 opening to EA8
 - yes, that's right, the
 Canary Islands -
 early in September.
 Stations all over western
 half of UK were working
 half-a-dozen EA8s
 at phenomenal strength;
 several GMs including
 GM4COK in Edinburgh
 made it.
 Sounds like a new
 Region 1 144 MHz tropo
 record at well over
 3,000km.
 Next stop D4C...?*

*Anglia TV weatherman
 Jim Bacon, G3YLA,
 would very much
 appreciate photocopies
 of log sheets from those
 of you who were QRV
 for any of the 144 MHz
 Es openings this year.
 Jim's address is on p433
 of June's RadCom
 and he'd be extremely
 grateful for your
 assistance even if you
 only had one
 contact all year!*

PROJECT YEAR

Youth in Electronics
Via Amateur Radio

TRAINING FOR THE STUDENT LICENCE

In the September issue of RadCom we published some details of subjects which might form the basis of the syllabus for the proposed 'Student' licence. It is quite likely that some members will consider the proposals too difficult, while others undoubtedly believe them to be totally inadequate.

This article attempts to put the syllabus items into the context of a training scheme and to show the method and depth of treatment that was considered appropriate when the original syllabus was developed. The format of the syllabus issued to the Society's Regional Liaison Officers was in the rather formal style used by many education authorities and in the change to a friendlier form some of the emphasis of particular subjects was lost. It is not possible in this article to deal with all sections of the syllabus, but a cross-section will be considered to indicate the kind of treatment which might be deployed. When it's all finalised, detailed treatment of the topics will be provided in the instructors' training manual. A second manual will be drawn up for the trainees.

There is now a wonderful opportunity to train a new generation of radio amateurs introduced to the hobby by 'doing' rather than assimilating theory from a classroom blackboard. To implement this type of training a venue possessing facilities for practical work must be chosen. As the practical work will form an integral part of the examination entry will only be permitted after the instructor has certified that it has been completed and, in the case of some subjects such as shortwave listening, proof in the form of QSL cards will be required. Constructional work will obviously have to be available for inspection too. It may not be necessary for it to be operational, provided the attempt is reasonable.

The practical exercises will need to be designed to keep costs very low. A few suggestions follow, all of which bear this criterion firmly in mind. Every club or group taking part in the training scheme will need to have access to an hf and a vhf transceiver, a simple selection of tools and a multimeter. These are minimum requirements. Some method of financing the scheme will be formulated later!

TOPIC AREA – MEASUREMENTS

The students should be introduced to a multimeter by a demonstration of the function of the various controls and/or terminals and the meter set to perform each of the functions by the instructor. This demonstration should be repeated as often as necessary and very simple pictures could be used to help the memory of the trainees. Each student should then set up the meter for a specified function and the process repeated until it appears safe to allow actual measurements to be taken. As you are probably quite aware, this takes longer to describe than the actual process. Considerable patience on the part of both instructor and student will be required in the interpretation of the meter

scale if an analogue instrument is in use.

Simple test circuits will now be required. These will be made up by students using very simple techniques, eg an led in series with a suitable resistor and switch connected to a battery. The simplest circuit will probably take the form of a small piece of chipboard with component wires trapped under metal drawing pins. The switch can be a piece of wire trapped under one pin and able to make contact with another about 10mm away. When the circuit is connected to a battery and the led lights, another demonstration can show how the meter is connected to measure the voltage across each of the components. The student quickly learns the necessity of connecting an analogue meter with the correct polarity.

An alternative method of connecting up test circuits makes use of small electrical terminal strips (choc blocks). By measuring the voltages across the resistor and the led and also that of the battery, the student demonstrates to him/herself the truth of Kirchhoff's First Law without even knowing it! In a similar fashion measurement of current can be demonstrated but with great emphasis placed on the extreme care needed when connecting an ammeter into a circuit. Hopefully the results of connecting an ammeter across a battery will not be demonstrated!

Use of the meter as an ohm-meter by the trainee can provide an excuse for introducing the colour code as it means, at this stage, of checking the results of measurement. In this connection, a recent letter referred to the answer to one of the questions in the pilot edition of D-I-Y RADIO – the third band was described as indicating the number of zeros to be put after the digits given by the first two bands, rather than as a multiplier band. This will, of course, give the same result but avoids the problem of explaining why a red band means multiply by 100 rather than 2 or a black band, multiply by 1 instead of 0.

TOPIC AREA – USING A RECEIVER

Make a start by demonstrating the function of the controls and switches and, in the case of a transceiver, indicate those which should not be used at this stage. Pick a suitable band and demonstrate, by tuning, the simple band plan. Have a chart available which shows the band edges as well as the sections used for different modes. The student can then try tuning Morse signals and later, ssb signals. He/she can get used to the sound of an ssb signal received in the incorrect mode. The choice of band will obviously depend on reception conditions and this can be pointed out to the trainee. A useful start would be on 3.5 – 3.8MHz (80m) where the idea of two way communication will be apparent almost immediately. Once the student is able to tune both Morse and ssb signals with acceptable results he/she should be allowed (always with supervision)

to tune around the band and encouraged to identify call signs – hopefully drawing the correct conclusions from them. A simple receiving log should be ruled up (not purchased) and filled in. QSL cards could be requested from some stations and the way in which this should be done clearly demonstrated. As there will be no Bureau facilities available stamped and addressed envelopes should be posted (or IRCs outside the UK). For obvious reasons this must be limited to small numbers.

It will probably be best to keep the receiving exercises to fairly short spells – say ten minutes per student per session – but repeated as often as possible.

When conditions permit the exercises should be repeated on 14.0 – 14.35MHz (20m). This band is not one of those believed to be available to the student licensee but it will give a very useful insight into the peculiarities of the higher hf bands. When open, 28.0 – 29.7MHz (10m) can be used and this will show very similar characteristics. Perhaps the most important point will be the loss of signal from a nearby station while the distant one is perfectly audible, which is a very good opportunity to talk about some of the characteristics of propagation and importance of listening for some time before deciding to transmit on that frequency. The reason for asking if 'the frequency is in use' should become apparent from this exercise.

The function of other controls should be investigated, including correct use of rt and af gain, the pre-selector, rll and if applicable, squelch. The advantages of using i.f. and a.f. filters and notch filters can be discovered by the student and the reduction of interference noted. If the rig has a built-in multimeter, its functions should be investigated – especially its use as an S-meter.

Operation of the transmitter will only be possible if relaxation of the rules relating to supervised use is forthcoming. In the absence of this facility, a demonstration will have to be provided by the instructor.

TOPIC AREA – PROJECT WORK

It is most important that any project built by a beginner should work. An early failure can easily destroy enthusiasm and this may be very difficult to regain. It is better, therefore, to start with very easy projects and move on to more comprehensive ones after initial success has been achieved. An led which lights (in the simple circuit described earlier) will be more satisfying than a direct conversion receiver which doesn't.

Teach soldering by demonstration followed by attempts from each trainee – again starting with very simple exercises. A piece of Veroboard and some pieces of tinned copper wire can be used in exactly the same way as resistors and capacitors, and after a few attempts the student will be able to sense his/her own success. Only when good

PROJECT YEAR

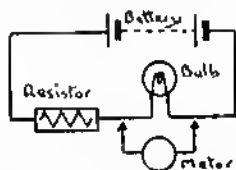
Youth in Electronics
Via Amateur Radio

soldered joints are being made should trainees move on to building simple circuits.

GENERAL

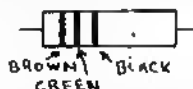
It is clear that the number of students which one instructor can effectively manage is few – four is probably the maximum. The amount of equipment required can be kept to a minimum by organising students to carry out the various exercises in a staggered fashion, ie one does soldering, a second measures while the third operates the radio. Lots of volunteer instructors will be needed.

These are some probable examination questions:



1. A simple circuit is connected as in Fig 1. What will happen if an ammeter is connected as shown?

- The bulb will light normally
 - The ammeter will indicate the current flowing through the bulb.
 - The bulb will not light.
 - The bulb will light brighter than normal.
- The correct answer is (c). Explanation is that an ammeter has a very low resistance – much lower than the bulb. In fact it's almost a short circuit. When it is connected across the bulb almost all of the current will flow through the meter and very little through the bulb. An ammeter should not be connected in this way. The meter should be a voltmeter which has a high resistance and in the position shown would indicate the voltage across the bulb.



3. A resistor has three coloured bands towards one end as shown. The value of the resistor is:

- 50ohms
- 1Megohm
- 150ohms
- 1.5ohms

The correct answer is (a). The first band is brown = 1; this is the first figure of the value. The second band is green = 5, the second figure of the value. The third band is black = 0, which indicates the number of 0s. In this case there are none, so that value is 150ohms.

7. A single side-band (ssb) signal received on a receiver set to receive frequency modulated (fm) signals will be:

- Inaudible.
- Impossible to read.
- Readable but with considerable interference from adjacent channel stations.
- Perfectly readable.



RSGB LOTTERY

Here's your chance to win one of these superb prizes AND help support the RSGB's Project Year. Apply for your tickets NOW

- A gleaming new Ford Escort 1.1L car
- Choice of a £750 holiday, an Icom 735 HF transceiver plus PSU and base mic, or an Icom 275E 144MHz base station donated by Icom UK Ltd
- A Kenwood TS-71 IE transceiver or an Amstrad TV/Video
- Yaesu FT770RH 70cm FM transceiver donated by SMC Ltd
- Yaesu FT23R 2m FM TRANSCEIVER donated by ARE Communications Ltd
- SC-1200 printer donated by ICS Electronics.
- Star Masterkey MKII & CMOS memory keyer donated by Dewsbury Electronics.
- Two antennas of your choice donated by Random Electronics.
- Two software packages – Tiny-PC and Z-Match – for the PC donated by Number One Systems Ltd.
- Gift vouchers for non-radio amateurs.



PLEASE HELP RAISE FUNDS FOR THE SOCIETY'S PROJECT YEAR BY APPLYING FOR TICKETS FOR YOURSELF AND YOUR FRIENDS

TICKETS ARE ONLY 25p EACH; JUST FILL IN THE COUPON BELOW AND POST IT RIGHT AWAY TO "RSGB LOTTERY", RADIO SOCIETY OF GREAT BRITAIN, LAMBDA HOUSE, CRANBOURNE ROAD, POTTERS BAR, HERTS. EN6 3JE. DO NOT SEND ANY MONEY UNTIL YOU RETURN THE COUNTERFOILS TO US

THE DRAW WILL TAKE PLACE AT THE RSGB'S ANNUAL MEETING ON 10 DECEMBER 1988

Please send me tickets for the lottery
Name
Callsign
Address
.....
.....
Postcode
Signature:

M O D U L A R MULTIBAND TRANSCEIVER

THE NOT-SO-DAUNTING APPROACH TO BUILDING YOUR OWN TOP-CLASS 10WATT MULTI-BAND HF SSB TRANSCEIVER

DESCRIBED IN TWO
INSTALMENTS BY MIKE
GRIERSON G3TSO/
KD3CL

Construction of a multiband ssb transceiver is a project likely to deter the most ardent constructor; however, by building a series of small modules the apparent complexity of such a project can be greatly reduced. With careful design, individual modules can be constructed, tested and aligned where necessary, before being brought together as a project exhibiting a high degree of sophistication.

One of the major stumbling blocks encountered by anyone designing or building multiband equipment is the process of band changing. Traditionally, large rotary switches are used; these often reach from the front to the back of the equipment, with numerous wafers switching a multitude of different circuits. The switches are hard to find, difficult to wire up and impose serious limitations on the mechanical layout and construction of the equipment.

This switching problem can now largely be

overcome by the use of diode and relay switching. Individual circuits can be switched remotely by a single dc voltage taken from an 11-way wafer switch. The layout of modules is thus independent of the switch location and so each module can be mechanically self-contained making testing and alignment a simple process. Equipment can be constructed to suit the individual requirements of the constructor and may either be spread out into a large chassis or packed neatly into a high density package in order to produce miniature equipment. Modules also permit considerable flexibility in future development or modification of equipment as well as making servicing somewhat easier.

With the increasing cost and complexity of commercial amateur radio equipment, home construction is once again becoming a viable proposition. Components are available from a number of mail order suppliers as well as at numerous rallies. Use of modern components, broadband techniques and integrated circuits makes construction and alignment considerably easier than it was two decades ago when home construction was more commonplace.

AN OUTLINE

The heart of the G3TSO modular transceiver is a modified version of the well known G4CLF board. This was based upon the Plessey communications ICs and described fully in my earlier article *A 30W SSB Transceiver for 160 metres* (*RadCom* July/Aug 85). The current design uses a 9MHz i.f. and could easily be substituted by any other 9MHz unit such as the G3ZVC board or a commercial MLX board. The modules to be described could easily be used in conjunction with the G3OGO transceiver (*RadCom* April 83) or the PW Helford to add to the original two band design.

The choice of a 9MHz i.f. enables a single vfo operating from 5.0 to 5.5MHz to provide cov-

erage of both the 14MHz and 3.5MHz bands with a minimum of switching. Local oscillator injection for multiband operation is achieved by mixing the 5MHz vfo signal with the output from a switched xtal oscillator, which is then filtered and amplified to provide the +7dbm required by the ring mixer on the G4CLF board. The new WARC bands have not been included in the design as the primary mode of operation was to be ssb, but their inclusion would not be particularly difficult and the pcb's layouts could be expanded to accommodate the extra filters and xtals.

Availability of suitable PA transistors for home construction is erratic, particularly if they are to be obtained at a sensible price. With this in mind a suitable low cost alternative was sought, resulting in the use of a kit pa currently obtainable from Cirket Holdings. The kit is designed to give 10W continuous output over the frequency range 1.5 to 30MHz and employs a pair of 2SC1945 PA transistors. They are well capable of providing up to 20W output for ssb or cw operation with less than 2mW of drive. This is ideal for low power operation as a pa in its own right or it can be used to drive a solid state or valve linear amplifier to considerably higher output.

Bandswitching has been achieved by using low capacitance switching diodes; signals are able to pass through those diodes that are biased on from a 13V supply and are confronted by a high impedance path from those diodes that are biased off. This is a technique used in almost all modern commercial equipment and enables bandswitching to be effected with a single wafer bandswitch linked by ribbon cable to the various modules that require switching. In practice, a second wafer is used on the bandswitch to enable selection of the appropriate oscillator xtal. The low pass filters used in the transmitter output path are switched using miniature relays as much larger currents are present in this part of the circuit.

An swr detector is included in the design. This provides both forward and reverse alc voltages used to control the output power on transmit and provide final protection under high swr conditions. Meter indications of Fwd and Ref power are displayed on a combined S-meter.

THE CIRCUIT

A block diagram of the basic multiband transceiver is illustrated in Fig 1. For simplicity this will be broken down into a series of six modules, each of which can be constructed and tested in its own right. All are constructed on relatively small pcbs designed to complement the dimensions of the G4CLF exciter module.

MODULE 1: 'G4CLF' MODIFIED BOARD

The G4CLF exciter unit (Fig 2) is very similar to the unit described in *RadCom* July 85 and it is only intended to describe the differences rather than the board itself.

Crystal filter and carrier xtals have been

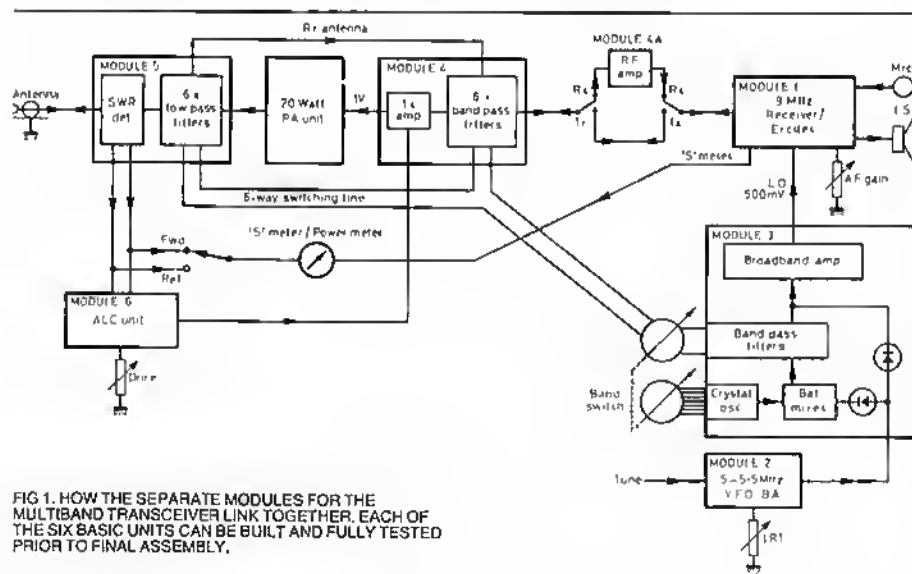


FIG 1. HOW THE SEPARATE MODULES FOR THE MULTIBAND TRANSCEIVER LINK TOGETHER. EACH OF THE SIX BASIC UNITS CAN BE BUILT AND FULLY TESTED PRIOR TO FINAL ASSEMBLY.

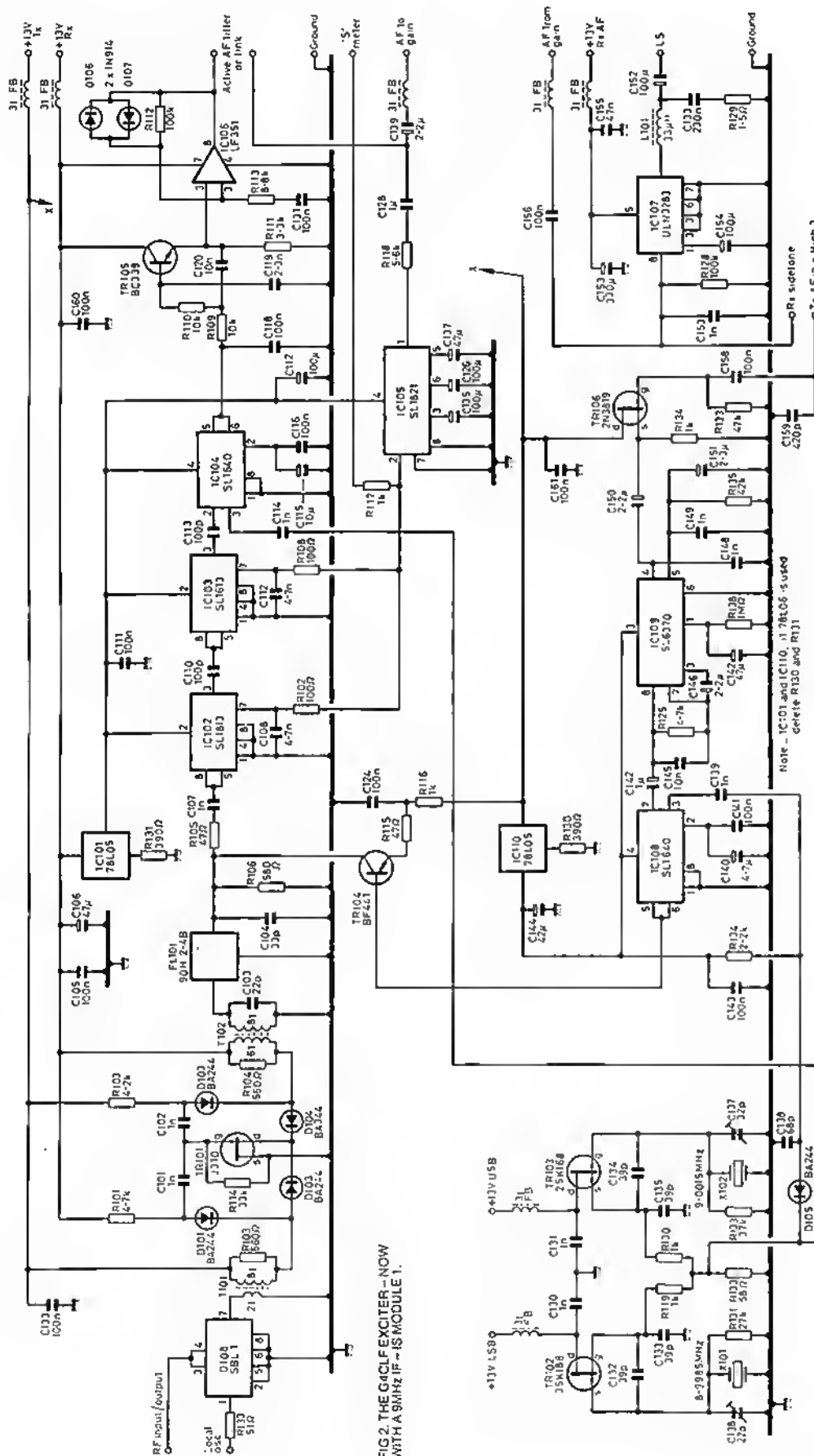


FIG 2. THE G4CLF EXCITER - NOW WITH A 9MHz IF - IS MODULE 1.

MODULE 1

R101,102,125	4.7k
R103,104,106	560R
R105,115	47R
R107,108	100R
R109,110	10k
R111	3.3k
R112,128	100k
R113	6.8k
R114	22k
R116,117,119,120,134	1k
R121,123	27k
R122	56R
R124	2.2k
R126	1M
R133,135,127	47k
R129	1.5R
R130,131	390R
R132	51R

C101,102,107,114,130,131,139,148,149,152	1nF	C
C103,104	22pF	C
C105,111,116,118,121,123,124,141,161,143,156,158,160,	100nF	C
C153	220µF	A
C108,112	4.7nF	C
C110,113	100pF	C
C115	10µF	T
C119	2.2nF	C
C120	10nF	C
C117,125,126,154,157	100µF	T
C106,127,144,147	47µF	T
C129,146,150,151	2.2µF	T
C136,137	22pF	Trimmer
C132,133,134,135	39pF	C
C159	470pF	C
C128,142	1µF	T
C140	4.7µF	T
C145,155	47nF	C
C122	220nF	C
C138	68pF	C

IC101,110	78L06 or 78L05 Reg with
R130,131	SL1612/SL612
IC102,103	SL1640/SL640
IC104,108	SL1621/SL621
IC105	LF351
IC106	ULN283
IC107	SL6270
IC109	SL6270

TR101	J310
TR102,103	2SK168
TR104	BF441, BF451
TR105	BC239
TR106	2N3819 (see text)
FB 3t	FX1115 (7 required)

L101,133	µH	Toko 283-AS-330
D101-105		BA244 switching diodes
D101,107		1N914

X101	8.9985MHz	} Supplied with filter
X102	9.0015MHz	

T101,102,	6t + 6t	FX2249 or equiv
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FL101	90H2.4B 9MHz 8 pole
	2.4kHz
	SSB Filter - IQD

A: aluminium, C: ceramic
T: tantalum, Poly: polystyrene

Transistors TR102 and 103 have been changed to 2SK168 types and the rare 78L06 regulator ICs can be replaced by the more common

Plessey ICs continue to be available from a number of sources including Cirkit and Bonex, while the below spec variety is available from Birketts at a very much lower price. The latter should ideally be tested before use and a batch of six surplus ics will usually produce about three serviceable items.

TR106, a microphone matching stage, has been added to the pcb to allow use of a high impedance mic. TR106 is not required for mics with an impedance of less than about 1k Ω , in which case the stage may be omitted and the mic input fed directly to C150 which should be

A small plug and skt has been added in the audio line immediately after IC106 for the inclusion of an active audio filter, which is particularly valuable if cw operation is required. The age bandwidth will also be improved with the filter connected in this position, and will characterize the sharp tuning of a xtal filter.

My original article (*RadCom* July 85) used a rather complex peb which proved difficult to reproduce. A revised layout is now provided (Fig 3) - this has a much simplified track pattern and can be easily reproduced using rub-on type transfers. The new peb has retained the original component layout (Fig 4) and is constructed on double-sided glass fibre board. All ground returns are made to the ground plane side of the board and all holes that are not ground returns should be lightly countersunk to prevent accidental shorting of components to ground. Locations are 8 pin DIL and can be used with either the SL1600 devices or the SL600 if the pins are bent to fit the hole structure. Some ground plane was originally added to the track side of the peb to enable screening of the oscillator unit, but this proved unnecessary. Screening of the xtal oscillator unit on the groundplane side of the peb is essential for the correct operation of the receiver.

So far a number of the modified boards have successfully been made by other amateurs; indeed my own board worked immediately it was switched on.

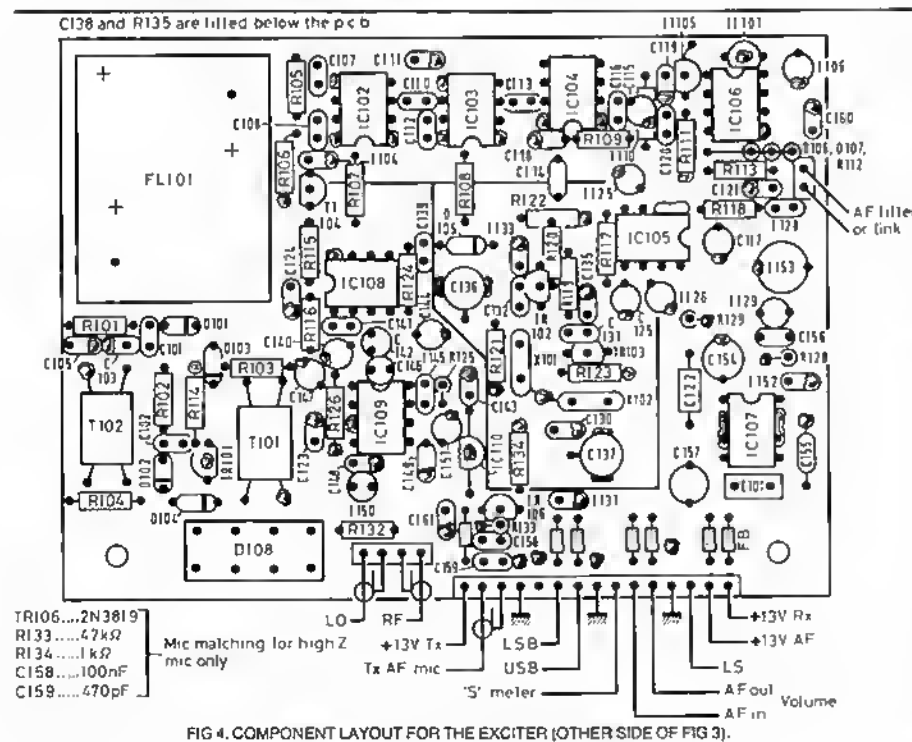
Fig 5 illustrates both modules 2 and 3, the VFO, the premix mixer, xtal osc, band pass filters and broad band amplifier. These are capable of producing the required local oscillator (LO) signal to the SBL1 mixer in module 1.

The vfo is a conventional Clapp version of the Collpits tuneable oscillator employing a 2N3819 FET. The type is not critical and almost any high gain FET device will suffice.

The coil L201 was wound on an ex-equipment (Collins) ceramic former provided with an iron dust slug to vary the inductance. Special attention should be paid to the slug which must be iron dust – not ferrite – and should be securely mounted to prevent vibration. Most purpose-built ex-equipment coils have a lockable or tightly fitting slug and if alternative coil formers such as the Neosid type are used, the cores must be tightened by taking a length of wool through the former to lock the core. It is better to use a coil with no slug in preference to a loose one, but alignment will be more difficult.

The coil is securely mounted to the side of the vfo enclosure with a clearance of at least 0.375" all round it, C205 is a plated brass capacitor with bearings at either end and is the RF27 unit type with a capacitance of approximately 50pF.

Capacitors C206, C207 and C209 are polystyrene types and C203 is silver mica. This has the effect of providing an element of positive temperature coefficient to counter the negative temp coef of the polystyrene type. Any residual drift can usually be reduced by substituting C203 with a similar value capacitor of different manu-



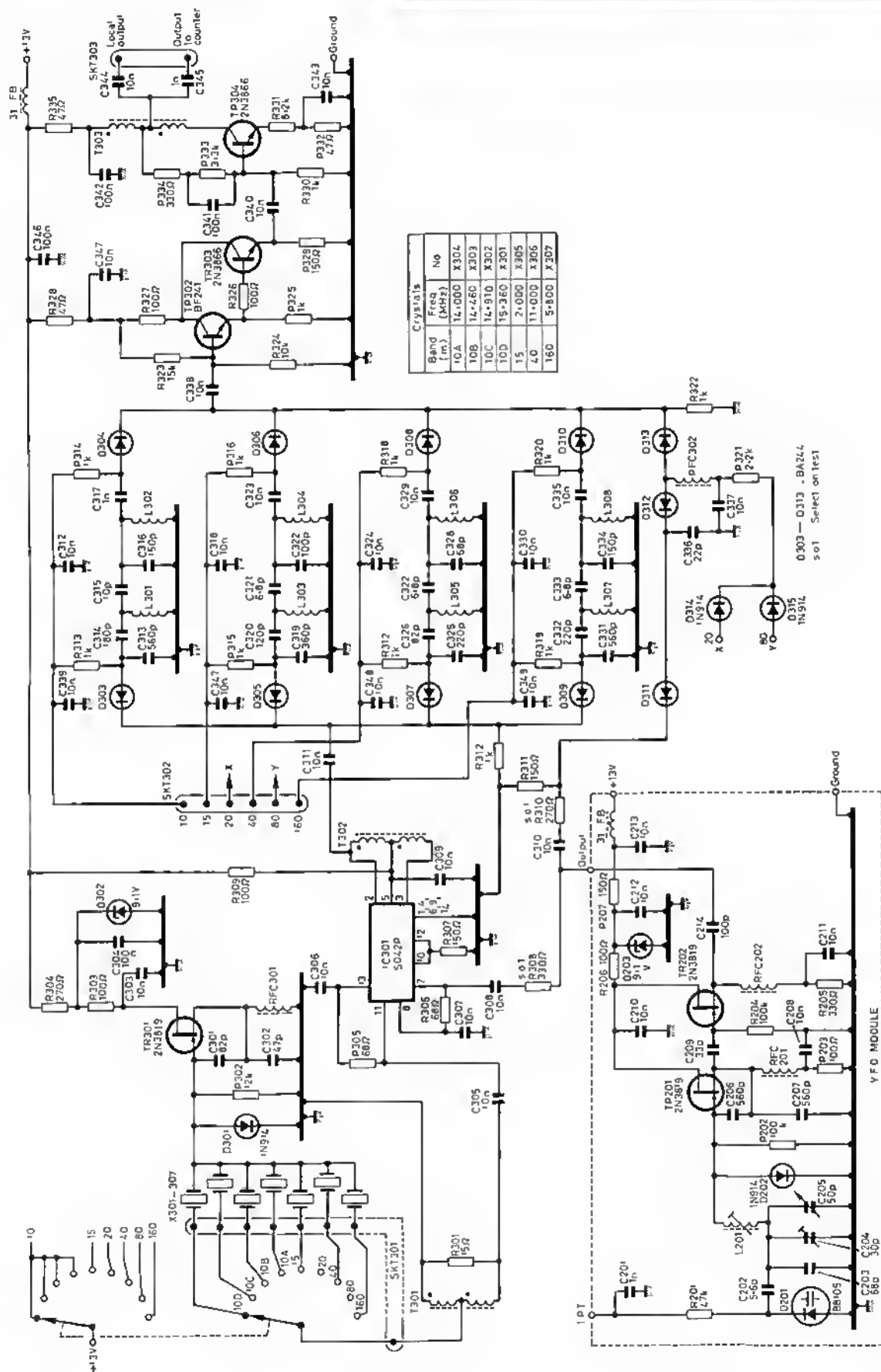


FIG. 5. CIRCUIT OF MODULES 2 AND 3 - THE VFO, THE PREMIX MIXER, XTAL OSCILLATOR, BAND-PASS FILTERS AND BROAD-BAND AMPLIFIER.

facture or design. If any form of frequency jumping occurs it can be caused by high rf currents present in C203. This can be eliminated by making C203 up from three lower value capacitors wired in parallel.

D203, a silicon diode, serves to stabilise the gate voltage of the fet oscillator while D203 provides a regulated supply for the vfo and

buffer amplifier. Irt or clarifier operation is provided by varying the dc voltage on D201 and provides about 2.5kHz variation either side of the carrier frequency.

Output from the vfo is loosely coupled to the gate of TR202 another 2N3819 FET acting as a source follower which serves to buffer the vfo from any marked changes in load. The output level from this stage is designed to feed IC301 the premix mixer and is inadequate for direct injection to the SBLI without further amplification.

The vfo is housed in an aluminium box purpose-built to house C205 and L201 (Fig 6a) and a small pcb. Rigid construction techniques should be used throughout with heavy gauge wire used for all off-board connections. All components should be firmly mounted to the pcb, which in turn should be secured to the enclosure with a minimum of four screws. C203 can be mounted above the pcb on pillars to enable component changes to be made without having to remove the pcb.

Mechanical stability of a vfo is vital if worthwhile electrical stability is to be achieved. Moving or vibrating components can give rise to fm, frequency jumping and instability.

The pcb layout (Fig 6b) includes some unnecessary tracks which were originally intended to provide a higher level of output required to drive the SBLI. In this design it is left unused. The pcb component layout is illustrated in Fig 7.

MODULE 2		
R201		47k
R202,204		100k
R203,206		100R
R205		330R
R207		150R
D201	BB105Varicap	
D202	1N914	
D203	9.1V zener	
TR201,202	2N3819	
RFC301,302	1mH axial choke	
C201	1nF C	
C202	5.6pF C	
C203	68pF SM	
C204	30pF Airspaced trimmer	
C205	50pF Variable (see text)	
C206,207	560pF poly	
C208,210,211		
212,213	10nF C	
C209	33pF poly	
C214	100pF poly	
L201	29t24 swg 19mm ceramic former with slug adjustment Apoxor SuH	
FB2	31FX1115	

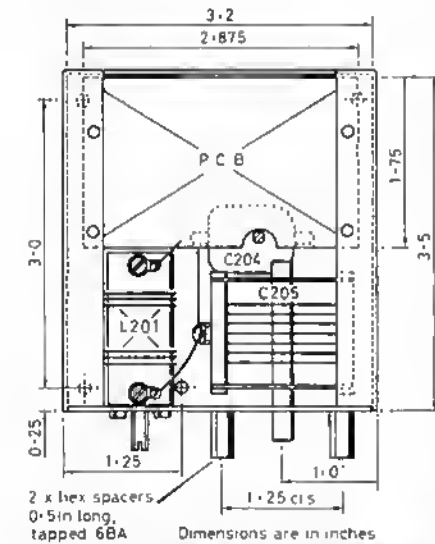


FIG 6(A). LAYOUT OF COMPONENTS INSIDE THE PURPOSE-BUILT ALUMINIUM BOX FOR MODULE 2 - THE VFO.

VFO ALIGNMENT

The VFO is aligned by adjusting L201, C204 and C205: the values indicated permit coverage of 5.0 to 5.5MHz \pm 20kHz at the band edges for the full range of C205.

To commence alignment, centre C205 and C204 and ensure that the de feed point to the irt circuit is grounded. With power applied to the vfo adjust the slug in L201 until the vfo oscillates at 5.250MHz; this can be checked with a suitable receiver or a digital frequency meter. The tuning capacitor C205 should be swung through its entire range and coverage of the vfo checked. Typically the vfo may tune to one end of the desired range but not the other, in which case, if the tuning range is insufficient, reduce the value of C204, readjust L201 and check the coverage again. If the coverage is too great then increase the value of C204 and repeat the operation. After several adjustments of C204 and L201 it should be possible to tune the range 5.0 to 5.5MHz with a little over at each end - say 10 to 20kHz. When the lid is placed onto the vfo unit

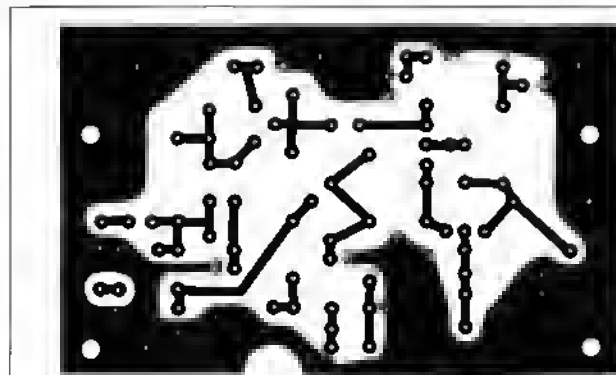
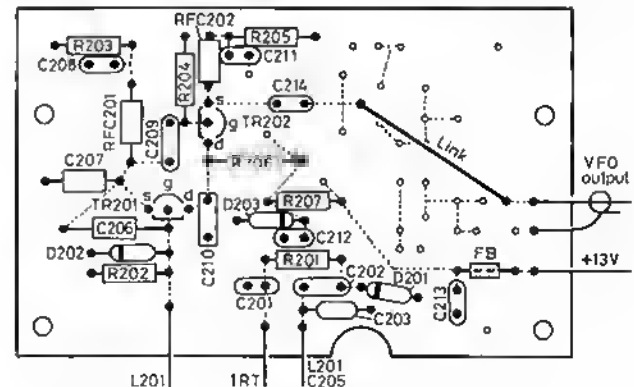


FIG 6(B). VFO PCB TRACK LAYOUT AND (RIGHT) FIG 7 - THE COMPONENTS.



the frequency coverage may change significantly owing to extra capacitance and some form of external adjustment of L201 and C204 is desirable.

The int may be checked by applying a dc bias to R201. The component values indicated on the chassis diagram (Fig 21) will allow a swing of the vfo frequency by about 2.5kHz either side of the nominal frequency. This is sufficient for most purposes but can be increased or decreased by changing the range of the bias voltage.

When the vfo is complete and aligned, the stability should be checked for over one hour. Any residual drift can be reduced by replacing C203 with either another silver mica capacitor of the same value or a combination of silver mica and polyester types. This process is a little tiresome but will produce a vfo with very acceptable stability. It should be remembered that the application of a soldering iron introduces heat to the vfo components and must be allowed to dissipate before further stability checks are made. A drift of less than 100Hz in 30 minutes is tolerable, but greater amounts can be annoying.

It is perhaps as well to mention at this stage that any slow motion drive unit used with the vfo should be mounted in the same plane as the vfo, or direct to the vfo enclosure, to prevent any frequency movement being caused by flexing of the chassis and front panel.

MODULE 3: THE PRE-MIX UNIT

Output from the vfo unit is fed via miniature RG174 coax to IC301 a Siemens SO42P double balanced mixer ic (Fig 8). R308 attenuates the signal slightly and may be adjusted to ensure that the vfo injection does not exceed 100mV

rms at the mixer port. In addition, the vfo signal is routed via R310 to a diode switch comprising D311, 312 and 313. On 14 and 3.5MHz the diode switch is biased on by applying a 13V supply from the bandswitch through diodes D314 and 315. This allows the vfo signal to pass directly to the wideband amplifier consisting of TR302, 303 and 304, where it is amplified to the 500mV level required by the SBL1 mixer.

TR302 and 303 are configured as a Darlington pair providing high gain, high input and low output impedance, and serve to drive TR304, a 2N3866 power amplifier provided with negative feedback to improve linearity. The output of TR304 is transformed to 50ohms by T303, a 4:1 transformer, and should be at least 500mV rms. Stage gain is set by R331, nominally 8.2ohms and can be adjusted if necessary. The output is fed by RG174 coax to the SBL1 ring mixer via R134, a 50ohm series resistor located on module 1. R134 is an attempt to match the lo output to the SBL1. In the original module it was not included, but is an idea borrowed from Atlas. The purist may prefer to use a pi or T matching network which will necessitate raising the lo output level.

TR301 is an fet xtal oscillator employing a 2N3819; again most high gain FETs will suffice. It is switched for multiband operation and the choice of xtal frequencies ensures that the oscillator is only required to operate over the range 5.8 to 15.0MHz. Xtals are HC18/U types specified for fundamental parallel resonance. They are soldered in and have their cans grounded. No provision is made for the adjustment of individual xtal frequencies.

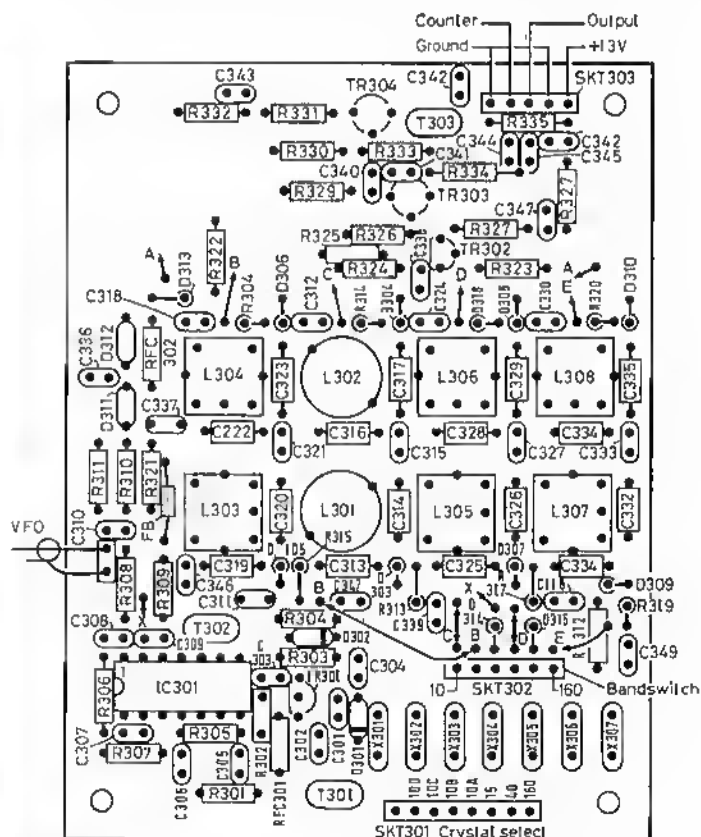
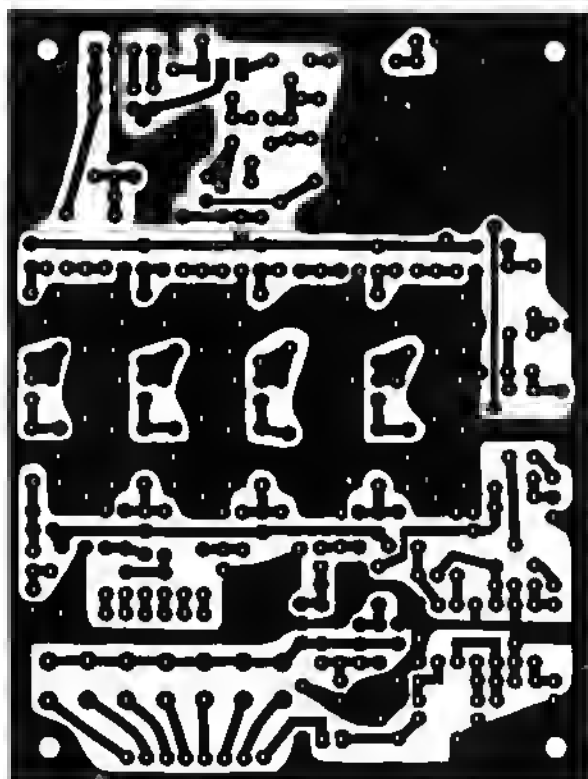
Output from the oscillator is taken by

sampling the xtal current in T301, a 4:1 step-up transformer coupled directly to the second input port on IC301, the pre-mix mixer. Output from the mixer is developed across T302, a halon transformer providing a 50ohm match to the following bandpass filters. On 3.5 and 14MHz no xtal is selected, the mixer ceases to function and the vfo signal is routed directly to the broadband amplifier. On the remaining bands the vfo is mixed with the xtal oscillator and the resulting signals are filtered in the band pass filters before final amplification. The mixing process is as follows:

Band (mhz)	Xtal (f1) (MHz)	VFO (f2) (MHz)	Output (f1 + f2) (MHz)
160	5.800	5.0 - 5.5	10.8 - 11.3
40	11.000	" "	16.0 - 16.5
15	7.000	" "	12.0 - 12.5
10A	14.000	" "	19.0 - 19.5
10B	14.460	" "	19.46 - 19.96
10C	14.910	" "	19.91 - 20.41
10D	15.360	" "	20.36 - 20.86

Fortunately the vfo and xtal oscillator signals are balanced out to a low level in the double balanced mixer, but the sum and difference signals are present and unwanted ones must be filtered out. A series of diode switched bandpass filters are used and are tuned to accept the f1 + f2 frequencies. Each of the four filters comprises of a pair of tap coupled parallel tuned circuits with a 50ohm input impedance and a high output impedance. The Q ratio of the filters is chosen to provide adequate bandwidth over the desired bands. One filter is used for all four segments of 28MHz.

FIG 8. MODULE 3 (THE PREMIX UNIT) PCB TRACK LAYOUT, ACTUAL SIZE, AND (RIGHT) FIG 9 - THE COMPONENTS.



Choice of xtal frequencies for the three bands results in the i.o being on the low side of the signal and has the effect of causing sideband inversion on the hf bands. This effect can be used to change the lsb signal on the lf bands to usb as used by convention on the hf bands. The only complication is the mixing process used on 3.5MHz where the vfo is subtracted from the i.f with the result that sideband inversion occurs and in addition the band tunes in reverse. The sideband inversion can be overcome by switching the sideband oscillators when 3.5MHz is selected. This is achieved with the diode network comprising D8 - D13 (Fig 21). The sideband selector switch is labelled 'Normal' and 'Invert' and produces usb on the hf bands and lsb on the lf bands when in the 'Normal' position. 'Invert' selects the opposite side band on any band.

The choice of oscillator xtals is based upon a range of off-the-shelf xtals from IQD Ltd. They are cheap and provide the required hand coverage including complete, but overlapping, coverage of 28MHz. This may cause a few calibration problems with a mechanical dial but is of little consequence if a dfm is used. Choice of 7.00 and 14.0MHz xtals presents a slight problem in that the harmonics from both these xtals appear on the lower band edge of the 21MHz and 28MHz bands. They are quite weak and in practice fall slightly below the lower band edge. A simple cure for the cw operator would be to use xtals for 6.990MHz and 14.990MHz, so ensuring that the unwanted signals are well out of band. The vfo tuning will be offset by 10kHz but can be compensated for by using an additional irt circuit operated by the bandswitch if required. As the transceiver was intended for ssb operation the use of the existing xtals has proved perfectly satisfactory.

Module 3 is constructed on a single-sided glass fibre pcb measuring 3" x 4". The track layout is illustrated in Fig 8 and the component layout in Fig 9. The board has a high component density and it is important to use miniature components. In addition there are a number of flying links located above the pcb. Toko coils are used and may be off the shelf types of appropriate inductance or rewound from surplus units.

TESTING AND ALIGNMENT

No alignment of the xtal oscillators is required or even possible. In practice, xtals tend to oscillate slightly low in frequency. The mixer and broadband amplifier have no adjustments other than the selection of R308 and R310 - the actual values used are indicated in Fig 5. R308 is chosen to set the vfo injection to IC301 at 100mV rms.

With 13 volts applied to either D314 or D315, the vfo signal should appear at the input to the broadband amplifier. If power is applied to the amplifier then the vfo signal should be available at the output at around 500mV rms. The output level is adjustable by selecting R310 which should be chosen to give a similar output level on 14MHz and 3.5MHz to that obtained when the mixer unit is operating.

The xtal oscillator may be tested by applying 13V and connecting a jumper lead across SKT 301 to select the appropriate xtal. Each xtal should be checked in turn to ensure that the circuit oscillates and that the frequency is correct. The xtal oscillator injection to IC301 should not exceed 100mV rms.



SAMSON SQUEEZE KEYERS

PAT HAWKER G3VA

A reviewer should declare prejudices. Mine include a rooted belief that amateur radio needs to include a significant element of human operating - manual cw and speech - even if your technical interests draw you to mechanical telegraphy (rtty); computer decoding of morse; packet; facsimile or sstv. If you are into computer-packet, good luck, though I shall never be convinced that reading off a vdu can give the same kick of personal achievement that comes from reading a weak and watery cw signal, knowing that no ic decoder yet devised could cope without endless 'repeats'. But there can be little pleasure in struggling to send manual morse on a poor key.

Sixteen years ago (*RadCom*, June 1972, pp364-5) when I reviewed the Samson ETM-3 keyer, one of the first based on the 'squeeze' (iambic mode), I stressed that any judgement on keys and keyers must inevitably be more subjective than objective. I wrote then of the ETM-3 (mains operated bipolar logic) that "the keyer does what it is claimed to do, does it well and will give enormous pleasure to anyone who is really prepared to adjust their brain-hand program to two-paddle squeeze keying. But it could be frustrating to the operator who believes that an advanced electronic keyer will dispense with the need for skill!"

My subjective judgement of the ETM-3 had, I must admit, been slightly soured by the discovery - after many weeks of practice - that the original model supplied for review purposes could be occasionally fooled by slightly mistiming the preceding letter, although by the time the review appeared a modified model (ETM-3b) had been introduced which incorporated additional circuitry and successfully eliminated the problem.

As a confirmed 'straight-key addict' I found the ETM-3 keyer from the West German firm (H. Samson, DJ2BW) extremely well made, if initially a challenge to use without making at least some errors, though I was not sorry to return to my selection of 'old-fashioned' keys that include a double-current Post Office-type key dated 1914, a German Junker key ('liberated' in 1945) and, recently, a modern Japanese 'brass' key (Hi-Mould HK-804).

For many years the Samson and Junker keys were marketed in the UK by Spacemarc (Arthur Owen, G2FUD) but following his retirement the Samson keyers have become available from Frank Watts, G5BM. The current models include ETM-8c, an entirely self-contained keyer with a 4096-bit cmos-ram memory chip; ETM-5c a basically similar keyer but with no memory chip; and ETM-1c a recently intro-

duced model for use with the external twin-paddles marketed by a number of firms (or home-made). The ETM-8c and ETM-5c have integral paddles of excellent mechanical design. The keyers are based on CMOS devices powered from four size AA 1.5V alkaline or zinc-carbon batteries (not supplied with the keyers) that can be expected to have a life span extending into years. The idling current is typically only about 1µA, making it entirely unnecessary to switch the keyer off when not in use.

This review is based on the ETM-8c memory keyer, an ingenious and flexible design which repays careful study of the bi-lingual (English and German) instruction booklet and the extensive off-air practice needed to take full advantage of its many built-in facilities.

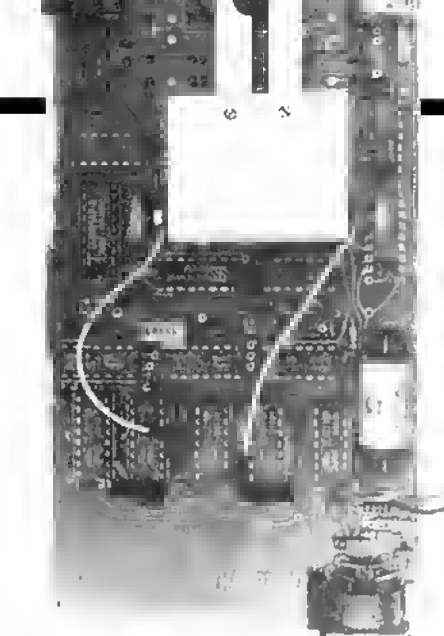
The 4096-bit CMOS-ram memory provides eight 512-bit memories, each capable of storing roughly 50 characters; seven of these are actuated from the keypad at the top front of the keyer, the eighth can be operated by an external switch for remote control; the eighth key has a double function. In conjunction with any of the other seven it provides a continuous repetition of a stored message or call; it can also be used, if necessary, to provide a manual button morse key or transmitter 'tune' key. A red light-emitting diode located on this eighth key shows the working of the memory clock and goes out when the memory is full or, in conjunction with the 'pause' switch, when the writing is stopped and the memory reset.

Apart from the ram, the ETM-8c has 14 CMOS devices, three transistors, seven diodes, and an LED in a compact enclosure formed from aluminium profiles, detachable panels and cover plates. The scratch-proof cover plates are finished in black textured vinyl giving the keyer an attractive modern appearance. On the top panel is the keypad to operate the memories and the repeat/tune function.

Small switches on the top left-hand side of the keyer are used for: (a) *dot/dash memory* to select in Morse A or B modes of operation; the dot memory 'remembers' that the dot key has been released before the dot actually begins - and correspondingly with the dashes; this memory can be switched off (and some operators may find they make fewer mistakes without the memory) but it seems worth persevering to achieve even smoother flowing characters; (b) *pause length* this governs the pause between repetition of information stored in any of the memories and can be 8 or 14 dots in length; and (c) *automatic stop* which in the 'on' position prevents any pulses in an unused part of a memory from actuating the keyer.

Once all these functions have been fully grasped, any of the memories can be loaded at any convenient speed and played out at higher or lower speed under the control of the front-panel speed control knob. As supplied, the range is from 8 to 80wpm but can be modified for high-speed meteor scatter bursts at up to 200wpm by replacing the 33k resistor in series with the speed control potentiometer by a 4.7k resistor. Conversely by changing the value of the series resistor to say 47k or 68k one could limit the top speed of the key and so 'handspread' its speed control (my feeling is that not many of us really require speeds between 35 and 40wpm?).

Outputs, including side-tone, are taken through a 5-pin DIN socket at the back of the



keyer. The outputs are arranged for transistor positive keying (most solid-state transceivers, FT101Z etc) but it is a simple matter to reverse the keying output connections where negative grid-block keying is required, as for example on the TS520S, TS820S, TS530S and TS830S. For negative polarity transistor output keying it is only necessary to reverse the keying output connections, using twin-conductor screened cable, earthing the braid at the transceiver end, and making sure that the braid does not connect to the metal body of the DIN plug (this would result in continuous sidetone). Additionally, both the ETM-8c and ETM-5c have an internal reed keying relay, rated at 250V or 0.5A (25W) which is brought into operation by simply moving a jumper plug. This high-speed relay is entirely suitable for cathode-keying of valve transmitters; both models are also available in a professional version for marine use, etc, with a heavy-duty change-over relay that also provides a receiver-muting facility not needed for amateur transceivers. Samson squeeze keyers are being increasingly used by professional operators. It should be emphasised that the keyer

need not be used in the 'squeeze' mode but can be used with the same movements as a single-paddle electronic key by regarding the two paddles as a simple, wide paddle.

Under test, the ETM-8c functioned fully in accordance with its specification. Immunity to strong rf fields appears to be good with no difficulty experienced, either during keying or memory replay, when used within a few feet of a voltage-fed long-wire antenna run at 100W output on 21MHz. When the relay is used, battery consumption increases but remains modest; transistor keying 3mA, with an additional 6mA during memory operation, and 20mA with the standard relay.

The mechanical 'feel' of the paddles is excellent and indeed the whole construction and design of the German keyer seems an excellent example of "Vorsprung durch Technik". Of course, the true test of good cw operating is whether you can send well-formed characters with a minimum of errors and *not* how fast you can send. With this key the characters come out perfectly formed or as gibberish. Such gibberish, however, seems always to be the fault of the operator. Squeeze keying is not at all easy to pick up by those of us who are heavy handed even on a typewriter. Despite many hours of off-air practice I still tended to make rather more mistakes on the ETM-8c than on my straight keys, but I have no doubt that for those with a more delicate touch and willing to take the time and trouble needed to perfect the technique, this range provides an excellent choice at prices that are not unreasonable for completely self-contained keyers suitable for home or portable operation.

SOLE UK AGENT FOR SAMSON KEYERS
SINCE MAY 1986: FRANK WATTS, G5BM,
WOODLAND VIEW, BIRCHES LANE, NEWENT,
GLOS, GL18 1DN.

MODEL ETM-8c (MEMORY KEYER WITH PADDLES) £139; MODEL ETM-5c (KEYER WITHOUT MEMORY BUT WITH PADDLES) £85; MODEL ETM-1c (KEYER WITHOUT PADDLES OR MEMORY) £34.

BOOK REVIEW

2MT WRITTLE - THE BIRTH OF BRITISH BROADCASTING RHP ODD

BY TIM WANDER. 179 + xiii PAGES, 60 ILLUSTRATIONS. PRICE £12.95 (INC. P&P) FROM CAPELLA PUBLICATIONS, 44 HOMEFIELD WAY, EARLS COLNE, ESSEX CO2 2SP (TEL. 07875 2674) OR FROM RSGB.

This fascinating new book is not only the story of Britain's first regular (weekly) broadcasts in 1922 but also a vivid reminder of a team of talented pioneers led by Peter Pendleton "Pip" Eckersley, amateur experimenter, professional engineer and first chief engineer of the original British Broadcasting Company until his dismissal by Sir John Reith. The 2MT Tuesday evening concerts were, in Eckersley's phrase, "Born in laughter, nurtured in laughter and died in laughter". They were hurriedly inaugurated, reversing the previous Government ban on regular broadcasting following the presentation to the Postmaster General of a strongly worded

petition, organised by the Wireless Society of London (later the RSGB) on behalf of the amateur radiotelegraphists of Great Britain. As *Wireless World* (then the official journal of the RSGB) commented in 1923: "Broadcasting in this country was initiated, not only at the request of, but through the insistence of, the experimental amateur".

This well-researched book tells the story of 2MT, 2LO and the pioneering Dutch station PCGG at The Hague which began broadcasting in the UK two years before 2MT was started. Although Eckersley's interest in radio stretched right back to 1905 when returning home from school he met his brother "Winding startlingly green wire upon a rod of shining black ebony. My excited question drew the answer: 'It's fun some experiments with wireless, come and see'... I became that summer one of only a few thousand who knew something about wireless. Today, tens of millions". As he wrote many years later.

G3VA

TECHNICAL TOPICS

PAT HAWKER · G3VA

LOW COST SYSTEMS AID THE THIRD WORLD

Technical Topics (July 1988) recalled how a combination of professional engineers and amateurs was responsible for the development and widespread introduction of carrier-suppressed hf ssb, not only on the amateur bands but also profoundly influenced the course of mobile radio generally: "the amateurs, initially in the USA but soon world-wide, truly blazed the way for the general adoption of the suppressed carrier form of ssb." But that was 40 years ago. Can amateur radio still contribute usefully to the far more sophisticated radio scene today?

My answer would be yes, although perhaps not in quite the same way. Today, the need in many parts of the world is not for the latest 'new technology' systems but for low-cost, thin-line communications. There are vast areas of Africa, for example, where virtually the only way of getting a message to a village, a few miles away, is to take it in person or find a runner. No telephones, no regular postal services – and little of the hard-currency needed to buy, install and maintain the advanced telecommunication services that we take for granted. Even in the UK there are situations where better communications are needed but are ruled out by the cost of the equipment. The amateur is still in a position to try out and develop new ideas in advance of the necessarily more cautious large organisations.

In recent months, several innovative, ongoing projects have come to my notice involving radio amateurs aiming at reducing the cost of radio services in establishing new systems.

(1) At a recent IEE conference on rural telecommunications, Dr S A G Chandler, G3UDD of Warwick University, described a project now being implemented in Sierra Leone. This will eventually provide more than a thousand communal 'village' radiophones based on 27MHz cb-type transceivers under microprocessor control and powered by solar arrays: Fig 1. The control units provide selective calling and automatically close down the network overnight as well as providing remote monitoring, performance logging and supervision of the power system. Cost of a complete terminal station is just £304 plus transport costs, the most expensive item being the microprocessor control unit (£110). The villagers, themselves, are shown how to use the equipment and carry out simple repairs and have shown enthusiasm at being personally involved. The cb antenna is erected on a bamboo pole.

(2) In Cornwall, Lionel Sear, G3PIT has shown, with the help of a few other amateurs, that low-cost cb equipment plus a long-length of 75-ohm twin-feeder (terminated with a 75-ohm resistor) can form a poor man's 'leaky-cable' system for underground communications in support of small, cost-conscious mining operations (described in *Mining Magazine*, August 1988, pp110-111). While such a system would not be applicable to underground coal-mining (on

grounds of safety), G3PIT believes that the principle, which has been tested with cb equipment modified for use in the 28MHz band, should be of interest to the small mine, decline or tunnelling operations and would be cheap enough for the speleologist. He notes that the DTI is willing to consider varying the terms of the standard 27MHz cb licence to allow experiments with underground communications.

(3) At the rural telecommunications conference it was disclosed that the next University of Surrey UoSAT, due to be launched early next year, will use 'experimental' as well as amateur frequencies in order to permit demonstrations of third-world commercial applications of low-earth-orbit satellites operating in a store-and-forward mode using the AX-25 'packet' protocol, as already tested by amateurs in the present UoSAT etc. It would make possible a global electronic mail service permitting messages from remote areas to be delivered overnight virtually anywhere in the world at costs far below those normally associated with satellite communications systems. The earth terminals would cost from about £2000 to £10,000. The paper by Dr Martin Sweeting, G3YJO and Jeff Ward (former ARRL staff member and now part of the UoSAT team) points out that "it is well within the current state-of-the-art to build a portable, solar-powered terminal using a lap-top portable computer, a 10-watt vhf transceiver, a single-

channel uhf receiver, and collapsible vertical or helical antennas all capable of fitting into a suitcase, and invaluable to technical, agricultural or medical workers who need to communicate with their support bases from remote, rural areas."

Rag Otterstad, LA5HE/OZ8RO draws attention to a six-page article 'A worldwide packet radio network' by Ciriaco R. E. Brunnaga, USN, in the American military communications journal *Signal* (June 1988). This traces the rapid growth since 1983 of AX-25 packet radio communications on hf/vhf/satellite networks now amounting to some 40,000 nodes worldwide, the number roughly doubling every six months for five years. These networks are, of course, the amateur radio networks and their repeaters. Packet-switching techniques were originally developed by computer/telecommunications experts for line telecommunications networks. Amateurs were the first to adapt the AX-25 protocol for hf/vhf radio circuits and it is only recently that the idea is being taken up by the American and British armed services. Amateurs were aided by the collective efforts of "a number of leading hardware and software engineers and communications professionals unhampered by fiscal, budgetary, political and bureaucratic limitations of government. Often overlooked are a number of unique characteristics that frequently make the amateur radio service a seed-bed in

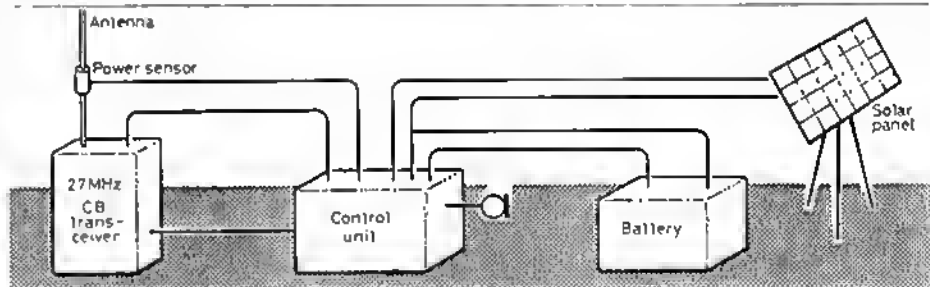


FIG 1. A VILLAGE TERMINAL IN THE SIERRA LEONE LOW-COST RURAL TELECOMMUNICATIONS PROJECT BEING IMPLEMENTED WITH THE ASSISTANCE OF DR S A G CHANDLER, G3UDD/SL SC OF THE UNIVERSITY OF WARWICK.

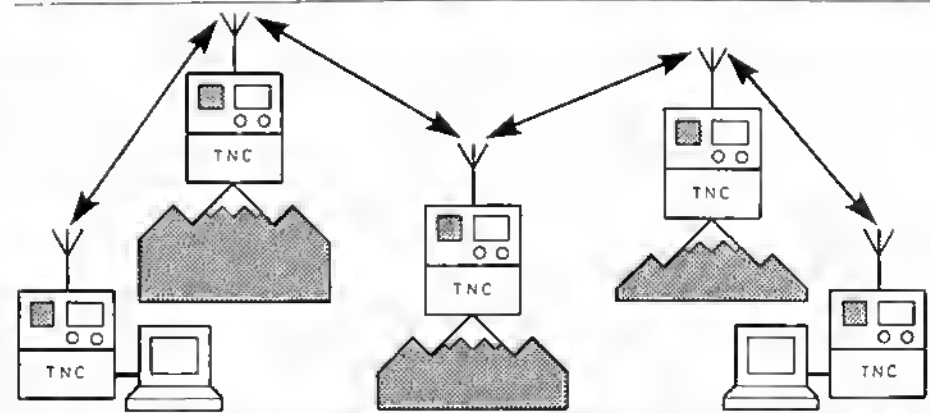


FIG 2. CMDR BRUNNAGA, USN, IN SHOWING HOW RADIO AMATEURS HAVE RAPIDLY DEVELOPED A PIONEERING WORLD-WIDE PACKET-RADIO NETWORK SHOWS A TYPICAL ARRANGEMENT FOR A STATION-TO-STATION PACKET RADIO CIRCUIT THROUGH THREE REPEATER NODES SPANNING FROM 200 TO 600 MILES. THE CIRCUIT IS ROUTED AUTOMATICALLY THROUGH INTERMEDIATE NODES AS NECESSARY.

the development and demonstration of new technology".

Cmdr Bruninga, who is Project Manager for the Integrated Communications System/Shipboard Communications Area Network (ICS/SCAN) shows how AX-25 techniques are now being adopted by the US Navy. He lists among the amateurs' unique characteristics: frequency agility; quality of service; ability to use many modes; flexibility ("the amateur radio user abhors fixed, centralised, vulnerable, high cost, critical hardware"); dependence on hf ("the amateur community probably holds the greatest expertise in the art of real time hf communications"); state-of-the-art "usually a communications technique is tried out first on the amateur hands. Many of the leading communications engineers and professionals in both academics and industry are radio amateurs anxious to try out their ideas before committing them to corporate investment. There is no greater motivation for excellence and productivity than working for one's self towards one's own imaginative goals".

THE TONSCHREIBER "B" TAPE RECORDER

Most of us accept the magnetic tape recorder in its various forms as a standard consumer-electronics product, both for entertainment and for its various applications to amateur radio, including the recording of meteor-scatter Morse bursts for replay at slower speed. Home recording has never been easier, with DAT (digital audio tape) yet to come. It was not always so. I recall my first attempts, in collaboration with Charles Bryant, GW3SB, using blank aluminium discs which then had to be replayed with fibre needles with appalling signal-to-noise (or sometimes noise-to-signal) ratios.

Magnetic recording was first invented by the Dane, Valdemar Poulsen as long ago as 1901

and was revived in the 1930s in the form of the steel tape Blattnerphon/Marconi-Stille machines, still remembered by old-time broadcast engineers for their very dangerous cutting edge when anything went wrong. But the wartime reports, for example, of Wilfrid Vaughan-Thomas made over Berlin in a Lancaster bomber by Reg Pidsley, G6PI were on wind-up disc-cutting machines. The Americans developed the short-lived magnetic wire-recorders in the early 'forties (I first came across these being used for telephone surveillance in 1945); they were also used as part of the airborne Joan-Eleanor vhf clandestine 250MHz rt links with OSS agents in Germany in the closing stages of the war in Europe. In those days high-speed Morse was recorded on paper tape by the ink-pen of an 'undulator'.

The use of coated plastic tape and high-frequency biasing to achieve good linearity were both German developments. Telefunken demonstrated a domestic "magnetophon" recorder at a pre-war Berlin Radio Show but their first extensive use was by the German armed services for telephone monitoring during the second world war. A special model developed by AEG-Telefunken was to prove the "parent" of the domestic tape recorder (captured machines were taken to the UK and the USA for thorough examination and led directly to the early British and American tape decks of about 1948). My first encounter with the truly remarkable "Tonschreiber b" was in 1945. One of these had been acquired along with other German military radio equipment, by colleagues in Special Communications including Roy

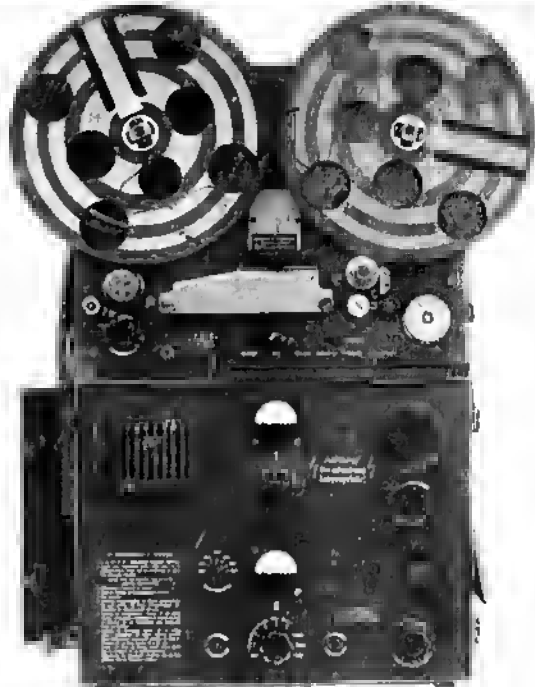


PHOTO: THE GERMAN MAGNETIC TAPE RECORDER USED FOR MONITORING IN THE SECOND WORLD WAR WAS NOT ONLY ANOTHER EXAMPLE OF THE EXCELLENCE OF THEIR MECHANICAL DESIGN BUT PROVIDED THE INSPIRATION FOR THE POST-WAR DOMESTIC MACHINES (PHOTO PA0SE).

Wilkins, G2ALM and the late John Butwers, ex-G4NY. It was used mostly for entertainment purposes but also to record some cw signals in which we were interested.

Dick Rollem, PA0SE (whose *Reflecties door PA0SE* column in *Electron* (VERON) has just celebrated its 200th appearance!) has contributed a detailed article on the Tonschreiber b in the July 1988 issue of *CQ* (English text) based on a machine in immaculate condition that forms part of the magnificent collection of German second world war communication equipment of Arthur Bauer, PA0AOB. The machine can still record and replay on standard 1/4" tape, although it uses dc rather than rf biasing.

Tape drive is by a synchronous motor fed from a powerful valve-type audio generator providing about 20watts output on frequencies of 22, 32, 44, 63, 88, 125, 175 and 292Hz to give no less than nine tape speeds. A dc motor on the same shaft, controlled manually, brings up the speed until the synchronous motor locks and takes control. Fast Morse is recorded with a high audio tone permitting replay at slower speeds. Perhaps the most interesting feature of this machine was the 'Dehner' (stretcher) drum carrying four heads which can be rotated in such a way that when a speech recording is replayed at lower tape speed, the relative velocity of the head in contact with it is similar to the recording speed; thus the speech is slowed down without affecting the pitch of the voice - a facility that has been possible by purely electronic means only within the past few years. On the Tonschreiber, speech played out at only quarter the recording speed is still intelligible, as PA0AOB demonstrated to PA0SE.

NO MORE MAGNETIC REF?

At the 1988 National Radio Science Colloquium of URSI, held at King's College, London (which

SIMPLE QUIET-TUNING FOR 100W TRANSCEIVERS

In discussing the Australian quiet tune-up device with an SWR resistive bridge, reference was made (*TT*, February 1988) to the alternative, rather simpler, approach described earlier by Les May, G4IHS ('safe tune-up with the FT7', *Rad Com*, August 1981, p715). This had been based on a design in the ARRL's *Solid-state for the radio amateur*. Unlike the Australian design, this does not give a direct SWR reading but is rather simpler to implement (especially for those who already have a suitable dummy load and built-in or external SWR meter). However, the component ratings of the G4IHS device were intended for

low-power (10W) transmitters such as the FT7.

Alf Heinrich, DL1BT (*cq-DL*, 6/88, p357) in 'Einfache Stummabastimmung fuer die 100W Urlaubsstation' describes an adaptation of this arrangement for higher-power transceivers: Fig 3. It similarly allows the antenna to be matched to the transmitting without radiating more than about 0.5W. In effect, a Wheatstone-bridge (which could be integrated within the atu) and dummy load is switched between the transceiver and the 'matchbox' atu during tune-up, thus helping to minimise those tune-up 'squawks' that remain a feature of the amateur hands.

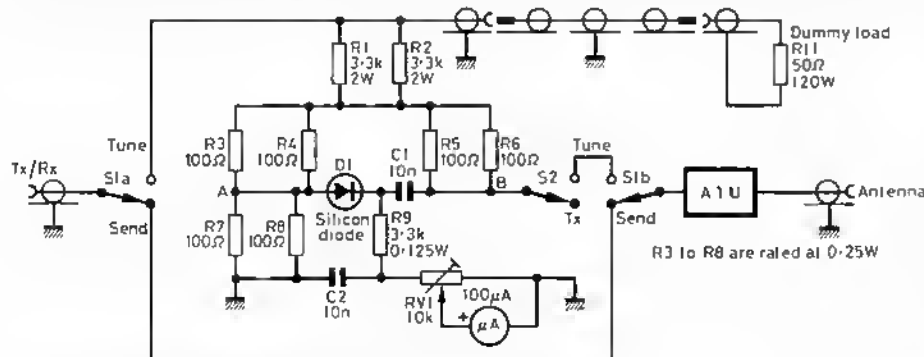


FIG 3. THE DL1BT QUIET-TUNING BRIDGE ENABLES 100W TRANSCEIVERS TO BE TUNED UP AND MATCHED TO ANTENNA WHILE RADIATING ONLY ABOUT 0.5-WATT.

has numbered amongst its professors Sir Charles Wheatstone, James Clerk Maxwell and Sir Edward Appleton). Dr W. F. Stuart of the British Geological Survey warned that the Government-funded scientists and technicians, who maintain the data bases on radio and geophysical phenomena on which the radio sciences, radio communications and navigation ultimately depend, are facing a financial crisis. Funding of 'routine' work of collecting and distributing geomagnetic and ionospheric data is in direct competition with what are seen as new and more 'exciting' scientific projects.

In a letter to *The Times* (15 June, 1988) Dr Stuart warned of the consequences that will follow within the next few years if, as seems possible, the magnetic reference may no longer be available for navigation in and around the British Isles: charts, Ordnance Survey maps, air traffic lanes, beacons, and runway approach plates will not be able to include an up-to-date, accurate magnetic reference.

Solar-terrestrial monitoring has been at the heart of the identification of the 'greenhouse effect', the 'ozone hole', the solar cycle, the solar winds, the Earth's fluid core, etc. The problem is not confined to the UK: cut-backs in monitoring projects have been reported from Canada and New Zealand.

CUTTING THE COST

For many years, Doug De Maw, W1FB has been encouraging the readers of *QST* to build simple equipment. Now in 'semi-retirement' he writes to *Ham Radio* (August 1988) about the high cost of entry to the hobby and to plead for simpler, lower-cost transceivers. Noting that hf transceivers are now priced at up to about \$6000, with even the bottom of the scale about \$1000, he comments:

"It is not difficult to visualise the shock coefficient associated with a teenager asking his parents to finance a new transceiver . . . I rebel against the cost of the new amateur equipment . . . What has been needed in the United States for a long time is a no-frills cw/hf transceiver. Maximum output power 100 watts is adequate. It would not contain a speech processor, i.f. shift or width circuit, nor would it need to have computer interface capability. A noise blanker is by no means a necessity since most blankers are ineffective for the more common types of QRN, and they degrade the receiver dynamic range when activated. I also question whether or not a basic rig needs memory channels and two internal vfo's . . . Someone needs to take the initiative towards encouraging the US and foreign manufacturers to develop a practical transceiver that can serve our basic operating needs — especially those of the Novice and other new amateurs . . . we need to get them started with the minimum of economic stress. Whatever happened to the concept of high volume and reduced per-unit profit (shades of Henry Ford)? Small volume and high markups are not in the best interests of amateur radio."

In the early 1980s, the Japanese manufacturers, guided by sales and market research, decided there was little demand for basic transceivers; everyone seemed to want rigs with all possible bells and whistles. An American visitor told me: "The hobby is being changed out of all recognition by amateurs having too much money or too easy access to credit."

DESIGNING LINEARS FOR LOW POWER DRIVE

As a series of *TT* items over the past few months have indicated, low-cost, high-power linear amplifiers can be put together without undue difficulty using a few PL519/PL509 television 'sweep' valves, which are still available with their B9D bases for about £5 new. But some readers may scorn this approach which inevitably results in relatively high inter-electrode capacitances and hanker after an amplifier using a single modern transmitting valve, although these do not come cheaply unless they are secondhand ex-equipment valves of uncertain provenance — and the same goes for the special bases they need.

In the United States, under FCC regulations brought in many years ago to discourage kilowatt 'after-burners' being added to 27MHz cb rigs, linear amplifiers may not be supplied with the 28MHz band wired, and similarly, it is forbidden to market 1kW-class amplifiers designed to be driven by an exciter or transmitter delivering less than 50 watts. The result is that the vast majority of factory-built linear amplifiers are designed for use with 100-watt 'black box' transceivers. Were it not for the FCC regulations significantly lower levels of drive would be technically feasible.

In *QST* (August 1988) Dick Stevens, W1OWJ describes the home-construction of a six-band, grounded-grid, single-valve amplifier capable of delivering 750 watts output at 14MHz with less than 25 watts of drive; 440 watts with 10-watt drive; and 220 watts with about 5-watt drive. An attractive specification for anyone with a home-built or factory-built exciter in the low-power ranges.

There is a snag, the Eimac 3CX800A7 high-mu power triode and associated Eimac SK-1900 socket are clearly in an altogether different price category to the PL519, although it is claimed not so different from the prices being asked for much older transmitting valves and sockets at this power level.

Another interesting feature of W1OWJ's design is the use of a pi-L output network, capable of reducing harmonic output by about 15dB compared with the conventional pi-network, although it does mean that the 1000pF loading capacitor needs to cope with higher rf voltages, and in this design is rated at 1.5kV which adds to the cost. The result is a straightforward, clean-looking design, that has third order products about 42dB below the pep output, with fifth order about 51dB down.

RF CHOKE RESONANCES

For those who do not like the idea of having their pi-network output coil at high dc as well as high rf potential in the arrangements outlined in *TT* (April, July etc), there is little alternative to tackling the difficult problem of making your own custom-design rf choke that does not over-heat, due to resonances on any of the bands you wish to use. In *QST* (June 1988, pp50-1),

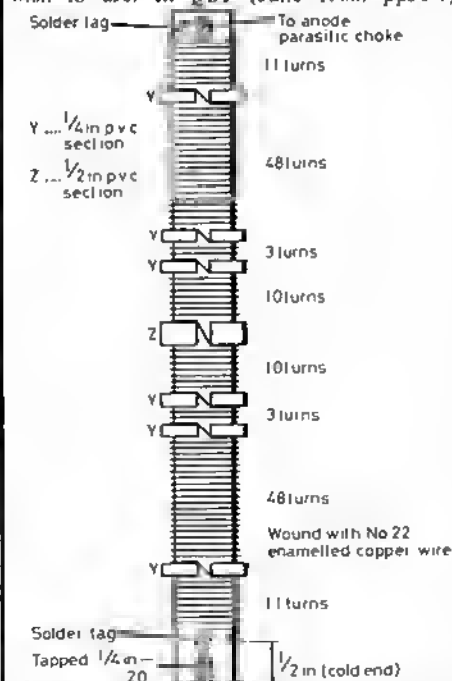


FIG 4. AA6GK'S ANODE-CIRCUIT OF RF CHOKE FOR HIGH-POWER AMPLIFIERS AVOIDS RESONANCES ON MOST HF BANDS. BUT ALL SUCH CHOKES SHOULD PREFERABLY BE CHECKED *IN SITU* SINCE NEARBY METALWORK WILL SHIFT THE RESONANCE FREQUENCIES.

AA6GK outlines an rf choke design which he finds copes with the traditional five amateur hf bands plus 1.8MHz and 24MHz (although he still has some problems on 18MHz and does not mention 10.1MHz) at powers up to the full American legal limit. Fig 4. He emphasises the need to use a former having extremely good dielectric and thermal properties. He uses an 8" length of 1" diameter 'Delrin' rod (UK equivalent?) which has a 450°F melting point, an excellent dielectric constant and is easily machinable. Once the choke was completed he sprayed it with polyurethane varnish and baked it in an oven for 30 minutes at 150°F. Although Fig 4 shows his original arrangement using pvc sections between the windings, these tended to melt under the heat from his 4-1000 valve and he subsequently removed them and liberally applied sonic quick-curing ('five-minute') epoxy glue to the gaps.

On the same page of *QST* KH6CP warns that choke resonances should, wherever possible, be checked with the choke mounted where it is to be used, rather than away from the surrounding metal objects which shift the resonant frequencies.

One thing emerges clearly, it is far from easy to design a high-power rf choke that will show no installed resonances within 20 per cent of any of the nine amateur bands from 1.8 to 30MHz — and that a design that suits one amplifier will not necessarily work without overheating in a different layout.

Peter Chadwick, G3RZP has pointed out that amateurs often overlook the fact that very high rf currents flow through the by-pass capacitor at the 'cold' end of the rf choke of a high-power pi-network — even with a low-voltage, solid-state amplifier.

MORE ON BATTERIES

The item in the August *TT* on exploding lithium batteries has, led to some confusion. There is a real problem in charging lithium memory-backup cells with some transceivers. But these two problems, fortunately, do not coincide. There is no risk of a cell designed as a memory back-up cell exploding as John Wilson, G3PCY/

5N2AAC of Lowe Electronics explains:

"I'm sure that the linkage between exploding batteries and memory backup in amateur equipment in *TT* was unintentional, but perhaps it is worth a further comment to reassure readers that there should be no danger of any damage whatsoever from memory backup cells.

"The type of cell used in most amateur radio

transceivers is the lithium-manganese dioxide cell designed to have a high internal resistance of about 200 ohms, which rises to several kilohms when the cell is shorted. The cells are designed to be wave-soldered into printed circuit boards which results in them being (temporarily) shorted out by the solder wave.

"The cells which may overheat when shorted

HINTS

When Evan Boden, N3DEO (OST, June 1988, p50) decided his alternative nicad battery pack for his handheld TR-2500 144MHz transceiver was kaput, he separated the two halves of the plastic pack, removed the cells, pcb and miniature switch and then built into the container a de adapter providing a regulated 9V source from the 12V cigarette-lighter socket of his vehicle electrics: Fig 5. The heat sink comprises a 1 x 2-in piece of 1/8-in-thick aluminium. Now he keeps his remaining good nicad pack for use when not in the car.

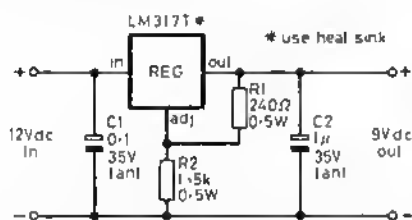


FIG 5. N3DEO BUILDS THIS ADAPTOR IN A DISCARDED NICAD BATTERY PACK TO PROVIDE A REGULATED 9V DC SOURCE FOR HIS TR-2500 HAND-HELD TRANSCEIVER WHEN IT IS OPERATED IN HIS CAR. HE USES A THIN MICROPHONE CABLE TO A FUSED CIGARETTE-LIGHTER SOCKET BUT LATER REALISED HE COULD HAVE LEFT THE BATTERY-PACK CHARGE CONNECTOR WITH A SUITABLE DC POWER PLUG ON THE ADAPTER END OF THE 12V CABLE. NOTE THAT THE LM317T'S MOUNTING TAB IS ELECTRICALLY CONNECTED TO ITS OUTPUT PIN AND MAY IN SOME CASES REQUIRE AN INSULATOR BETWEEN THE REGULATOR AND THE HEAT SINK.

At one time I used thermocouple rf meters to indicate the rf current flowing into the transmission line or long-wire antenna but soon found how easy it is to burn them out. Since then I have used a shunted torch bulb as a satisfactory substitute, suffering far less trauma when occasionally one is accidentally 'blown'. The lamp also scores over the meter in providing continuous visual reassurance from the operating position that all is working normally. Bill Orr, W6SA1 (*Ham Radio*, July 1988, p60) quotes W6SVM for one version of this old dodge: "He shunts a No 47 pilot lamp (6-9V, 0.15A) with a 330hm 1W resistor. This little assembly has

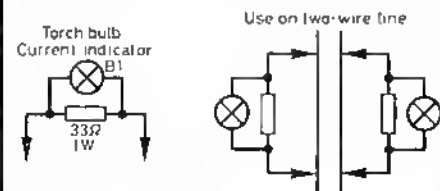


FIG 6. USING INEXPENSIVE PILO-LAMP BULBS AS RF CURRENT INDICATORS. CLIP ACROSS A FEW INCHES OF ANTENNA FEED-WIRE. VARY RESISTOR VALUE TO MATCH LINE CIRCUIT ETC.

copper alligator (crocodile) clips on it and he snaps it across a few inches of his feedline at his antenna tuner: Fig 6. He uses two of these gadgets for a two-wire line. Vary the tap spacing to accommodate your power level."

In addition to the papers in *IEEE Conference Publication No 284* "HF radio systems & techniques", a further paper, providing more background information, on the SRI etl and its receiving loop antennas (*TT*, July 1988, pp520-1) appears in the 'special issue on short-wave broadcasting' of the *IEEE Transactions on Broadcasting* (June 1988, pp159-166) as 'Interference-reducing antennas for short-wave broadcast listeners' by Dr O G Villard, Jr. Incidentally, Mike Villard, W6QYT would be glad to correspond with amateurs who have built and used these antennas; his address is: Dr O G Villard, Jr, Senior Scientific Advisor, System Technology Division, SRI International, 333 Ravenswood Avenue, Menlo Park, CA94025, USA.

In connection with current work on the development of neural network computers (ie computers organised in much the same way as a brain) the US DARPA has estimated that the human brain contains 10^{11} neurons, each having roughly 1000 dendrites giving the brain a storage potential of 10^{14} interconnects. Nerves fire at 100Hz so a human brain (not mine surely) has the potential to make 10^{16} interconnects per second. This is far, far in advance of the Cray XMP-2 supercomputer with its potential of 50×10^6 interconnects per second. Even a fly's brain, it is said, can manage some 10^9 interconnects per second.

A QST hint from Edwin Walker, WA4DFS suggests the following method of making small, adjustable coil formers: cut a short piece of heat-shrink tubing that is just large enough in diameter to pass a No4-40 or 6-32 screw. Coat the screw with silicone lubricant, slip the tubing over the screw and shrink the tubing. After it has cooled and hardened, wind the coil on the tubing without removing the screw. Use quick-setting epoxy glue to secure the wire to the former. Once the glue has set, you can adjust the inductance by varying the core material and the depth to which it is turned into the coil. A brass screw reduces the inductance; a ferrous core increases it.

Desmond Barry, G3ONU adding to the Collins saga notes that the KWM-2 was

announced from 15 October, 1959 to be succeeded by the KWM-2A a couple of years later. In September 1976, a Rockwell-Collins advertisement claimed that "in the last 15 years some 27,000 Collins KWM-2A units have been sold" - possibly a production record for a fully-valved hf transceiver. He still speaks highly of the Collins S-line with their good performance, good service manuals and requiring a minimum of test gear to maintain to specification. He adds: "It seems strange to me that so much new equipment suffers defect in design and/or production and how on earth does the average amateur know if his latest purchase meets its claimed specification? Having read 'In Practice' in the July *Rud Com* why should the 20 manufacturers of the 20 commercially-built power amplifiers not be named so that they and RSGB members can take appropriate action? Does not the Society have a duty to those who have to suffer poorly designed and/or manufactured equipment?" Perhaps the writer of 'In Practice' feared the type of reaction I received after naming telephone apparatus in the August *TT*!

TT has recently shown several ways of powering 12V equipment from 24-28V vehicle batteries. W9OBG (*QST*, June 1988, p49) shows one way of powering 28V relays from a centre-tapped 12V power supply unit simply by adding two diodes: Fig 7. He adds: "Two addi-

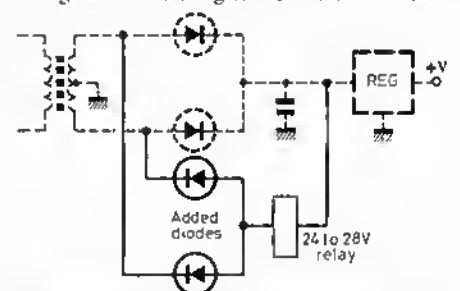


FIG 7. W9OBG'S METHOD OF POWERING 24-28V RELAYS FROM A CENTRE-TAPPED 9 OR 12V PSU SIMPLY BY ADDING TWO DIODES.

tional diodes furnish a negative voltage approximately equal in magnitude to the regulator's positive supply. The potential difference between the two supplies is about right for powering 24- to 28V relays. If the resulting voltage is too high, use a dropping resistor or try moving the positive end of the relay to the output of the positive regulator (if there is one in your circuit). Two warnings: (1) Both ends of the relay solenoid, and any associated switching lines, must be kept above ground to avoid short-circuiting the secondary of the power transformer. (2) This circuit cannot be used with a full-wave bridge supply."

AND TIPS

are probably the high-energy lithium thionyl chloride types, but these are not normally used for such light duty applications as memory backup, and would not be encountered in any amateur application. The cells certainly pack quite a punch, the 'D' size, 3.5-volt cell being 14Ah capacity with a continuous current rating of 10A. One can imagine the results of a short circuit."

I agree with G3PCY that memory-backup cells as found in amateur radio equipment incur no risk of explosion but I am a little unhappy at the suggestion that this applies to lithium-manganese cells in general, unless they have adequate built-in protection: see *TT*, November 1987, p834. Unprotected high-energy lithium-manganese cells can deliver many amperes of current and it was the risk of explosion when short-circuited that delayed their appearance on the consumer market for a number of years until cells with double or triple protection broke into the flash-camera market. These, of course do not have the high internal resistance of the memory cells.

While there is no danger in short-circuiting these memory cells for a short period, if done for a lengthy period it will of course exhaust the cell. In *QST's* *Links and Kinks* column (June 1988, p47) VE3HCD and WB3HAE describe how they accidentally plugged their memory back-up cell replacements into battery chargers. Otto Cepella, VE3HCD writes:

"Recently, I purchased a pair of lithium cells for backing up CMOS memory. Two 1/2-inch long radial leads protruded from each cell. To prevent the leads from shorting together against metallic objects in my junk box, I placed the cells, leads first, into the black conductive foam I use to protect static-sensitive integrated circuits. My haste to protect the cells resulted in their demise! . . . Antistatic foam isn't called 'conductive foam' for nothing. The resistance of the foam over a distance equivalent to the cell's lead spacing was about 500 ohms. By the time it came to install one of the cells, its terminal voltage measured 0 volts."

A similar experience was reported by WB3HAE except that in his case the cell arrived in plastic foam and he left it in the packet for several weeks. The foam was conductive and his

'new' battery was dead before it was installed. David Newkirk, AK7M adds the note that it doesn't pay to put a powered-up pcb down on a piece of conductive foam; one of his friends had to replace a 40-pin microprocessor chip after doing this. It is not only conductive foam that one has to worry about; conductive plastic-bubble packing material can provide a leakage path.

In *QST* (June 1988, p50), Joe McHaffey, K4HP reports a problem on his 4 1/2-year-old FT-980 transceiver (digital display garbage when the rig first switched on) which he traced to low voltage of the cpu memory battery (two AA cells). His recommendation: "Change your FT-980 memory backup battery about every three years, and you'll avoid experiencing this sort of problem."

Hazards arising from short-circuited batteries and low-voltage, high-current power supply units are not confined to lithium cells. *TT* has referred on several occasions to the dangers arising from wearing rings or metal watchstraps while working on 12V solid-state transceivers etc. Very serious burns can result if the metal gets across the supply and rapidly heats up. It has also been pointed out previously that a short-circuited nicad battery can cause a fire or even an explosion. This is underlined in a letter from Ian Burnes in *Practical Wireless* (September 1988, p15) who carried home in his car a spare battery pack for his FT-23R in his wife's shopping bag, where the unprotected contacts came into contact with some silver foil. By the time he had reached home the area around the contacts had melted with the heat, and the complete case and nicad cells were ruined. The battery pack burnt through the shopping bag, fortunately without causing a fire as could easily have happened. He believes the manufacturers of battery packs should add thermal cut-outs or a slide-on plastic cover, or at least provide a printed warning drawing attention to the danger. The Editor of *PW* adds a warning that considerable respect should be paid to all forms of storage batteries: "I even protect the terminals of dry cells if carrying them loose. Though there may not be enough power to start a fire, they're too expensive to risk flattening them by shorting across the terminals."

DO-IT-YOURSELF BATTERIES MADE FROM FRUIT JARS!

In the *Bulletin of the British Vintage Wireless Society* (Vol 13, No 1, 6/88) Roger Snelling has dug up an item from *Wireless World*, April 1917 as follows:

"Amateurs will be interested in the hints given in our contemporary *Telephony* of Chicago regarding the use of exhausted dry cells. 'To make the best wet batteries on earth' writes the contributor '... take quart fruit jars and put into each about one tablespoonful of powdered sal-ammoniac. Take an old dry cell with the zinc not too badly eaten - the better the zinc the better the wet battery and punch a screwdriver once through the zinc halfway up the cell to admit the solution. Put the dry cell into a fruit jar and fill to within half an inch of the top of the jar with rain water'. The writer goes on to suggest that two sets of cells be made, for use alternatively, so as to give each set a rest. 'Don't let the old batteries stay in until the zinc is gone or your battery jar will be choked by swelling. Don't imagine you will not have to look at these batteries occasionally. You may have to add a little water and a little sal-ammoniac once every four or six weeks or replace the old dry cells. Almost everything needs a little attention occasionally, and batteries are no exception."

It sounds as messy a job as the original 'chemical rectifiers' used by amateurs in the 1920s in early mains power supply units.

Incidentally when Duracell recently closed a watch-battery making plant with the loss of 350 jobs, the management claimed this was because their batteries were lasting too long. Reminds me of the story that in the 1940s, British battery manufacturers were most reluctant to change from cylindrical-cell hi batteries to layer batteries, and the more recent complaint by UNESCO that they have experienced problems in developing a low-cost solar-powered radio receiver for Third World countries because of lack of co-operation from specialised plastics firms associated with battery manufacturers.

SULPHATION OF LEAD-ACID BATTERIES

The conventional lead-acid vehicle battery has acquired the reputation of staying in good shape for only a few years. As noted on previous occasions in *TT*, one of the main problems is sulphation although it is sometimes possible to revive - at least temporarily - an apparently dead battery by using Glauber's salt provided that the procedure given in *TT*, December 1984, p1057 is carefully followed.

An interesting letter in *Electronics Australia* (June 1988, pp6-7, 145) from Frank Walker suggests that the best form of protection against sulphation is to keep the battery fully charged at all times. He writes:

"A fully charged battery has a positive plate of lead dioxide and a negative plate of lead, both in finely-divided form. On discharge the negative plate reacts with the sulphate ions of the sulphuric acid electrolyte to give lead sulphate, whilst the lead dioxide is reduced to lead on the positive plate and water is generated at the same time. When fully discharged, the negative plate

is now finely-divided lead sulphate, the positive plate is fine lead and the electrolyte is weaker. When we re-charge the battery all this is reversed . . .

"If the battery is left in a discharged state for some time, a problem occurs. Lead sulphate is very slightly soluble in sulphuric acid. It will dissolve and slowly re-crystallise on the negative plate, but this time in large crystals which do not react easily with the hydrogen during the charging process. This re-crystallising is helped by the normal day-to-day temperature fluctuations, as lead sulphate is more soluble at higher temperatures. A further problem is the mechanical effect of the growing crystals which tend to loosen portions of the plate material.

"This change from finely-divided lead sulphate to big crystals in a partially or fully discharged battery is the process generally called 'sulphation'. What can be done about it? Once it has occurred it is almost irreversible. Certainly any mechanical damage cannot be repaired. A

very long, very slow trickle-charge may restore some capacity but this will only put off the evil day for a short time . . . I once tried the wartime dodge of using sodium solution (Glauber's salts) on a motor-cycle battery and restored some capacity but it eventually shorted out due to the mechanical damage to the plate.

"Prevention is the only way. Keep the battery fully charged at all times. Even a partly discharged battery will undergo some sulphation. If the battery is to be left unused for a time, regular top-ups of charge or a very small trickle charge is necessary, because internal leakage will gradually discharge the battery, even if it is disconnected. A figure as high as 1% of charge per day has been quoted for this."

In view of the number of amateurs who use vehicle batteries, not only for mobile operation but also for use in the shack, this advice should help prolong the life of their batteries. Then if they do fail, it is worth giving them a dose of Glauber's salts.

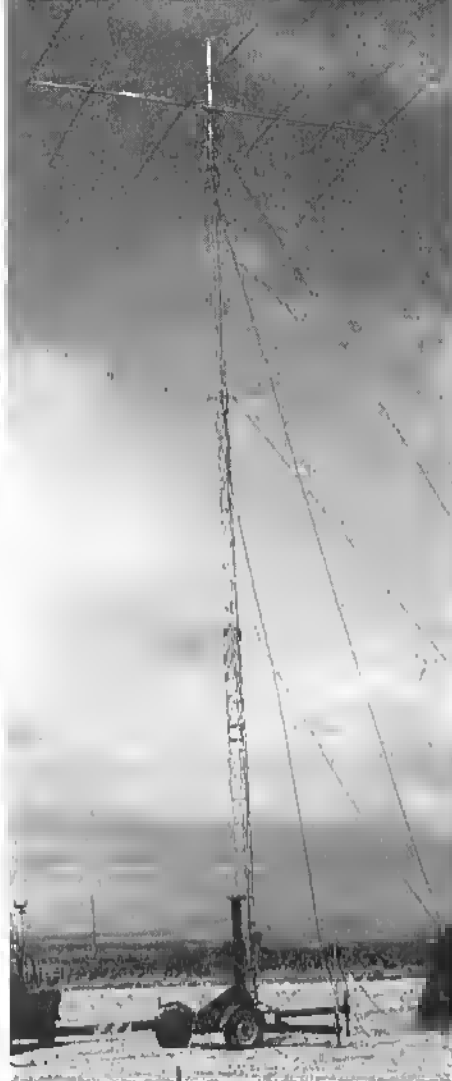
NFD '88

NFD, now under the umbrella of the Region 1 CW field-day event, remains the most popular operating event in the UK contest calendar. This year there were upwards of 1000 RSGB members manning the 120 stations that entered the event. Eight of these did not put in logs, even though some were active during the contest period. Two had problems at the start. This left 64 in the Restricted and 48 in the Open section in contention. To commemorate the 75th Anniversary of the RSGB a special certificate is being awarded to every group that entered the event.

There is something special about NFD which seems to enable clubs using a single wire aerial at moderate height to compete on equal terms with groups having massive aerial farms. Such was the case this year when the leading Open and Restricted groups were more or less neck and neck, with only one point difference in claimed score. It was a real cliff-hanger, but in the final tally the leaders were Marple in the Restricted, just pipping Verulam in the Open.

Every NFD is different, and 1988 was no exception with much better than expected conditions on all hf bands, particularly 28MHz which was open to Europe for much of the 24 hours. Both 14 and 21MHz provided worldwide and inter-Eu propagation for the whole contest period. On 14MHz there was an almost continuous path to North America, and for some, it was often easier to work a string of W6s than DL/P stations. Although the lf bands were used and 7MHz took the usual pounding, traffic on 3.5MHz was much lighter than usual and 1.8MHz was less used, except for the late night honus bonanza. Europe was well represented with over 300 portables appearing in the logs from EI, DL, HA, HB, f, ON, OK, OH, OZ, PA, Y, YO, YU and most of the USSR countries.

The old enemy 'Murphy' is a great leveller; it would not be NFD unless he made his usual visitations with dire results for a few unlucky groups. Another uncertain factor is the weather and for those groups located in the southern half of the UK, it seems to get worse every year. There were many reports of long periods of heavy rain, thunder and even the odd hail-storm. The HFCC were pleased to note that a number of groups had installed spark-gaps and static drains – and found them of value (old spark plugs shunted with a high-value resistor are useful protectors for open-wire lines). Addiscombe ARC had a near miss when a nearby lightning strike produced a fireball around the (happily) disconnected top-band dipole and nearby SRCC (Croydon) were unable to connect their antennas for some time because the dangling feeders were discharging to ground with a real 'Brooks benefit'. North Bristol ARC



RESULTS OF THE RSGB's 75TH COMMEMORATION IARU REGION CW FIELD DAY 4-5 JUNE 1988

were less lucky and their TS430S was incinerated by a direct strike on the antenna. Thankfully, nobody was hurt, but it was a frustrating weekend for them as their log was one of those that could not be accepted (see later). Other groups in Surrey and to the west of London also reported on nearby strikes and fireworks, but without any serious equipment damage. One homebrew ATU suffered a burn-out, a length of coax was welded together at one station (they had a spark-gap which probably saved other damage), and an aerial switch suffered from flash-over at

HF NFD – “The most

another location. Further north, the weather was generally better and several groups were able to hold outdoor cook-ups.

The approach to an NFD event varies from group to group. For some it is more than a contest – it is almost a way of life with the 24 hour operating period being the culmination of many months of planning. Others tend to leave things to the last minute and treat their entry on a most casual basis with virtually no pre-planning, no spare equipment and no prior thoughts about tactics. A number of clubs regard it as a weekend out with the boys with a chance to work some dx using antennas that cannot not be erected at the home locations. While the different approach must have some effect on the results, except for the dedicated groups who go all out to try and win the coveted awards, it is not as great as might be expected.

THE AWARD WINNERS

NFD AND BRISTOL TROPHIES: With such a small difference in claimed scores between Marple (Restricted) and Verulam (Open), last year's winners, log accuracy was of paramount importance and the adjudicators spent many hours checking and re-checking the two very excellent logs. Both groups lost points, Marple 20 and Verulam 23, but these were very small numbers bearing in mind their total scores. The difference was enough to give Marple the premier position and award of the NFD Trophy. Verulam receive the Bristol Trophy which is awarded to the overall leader in the opposite section to the Shield winners: It's a fantastic performance by both groups who are to be congratulated for their performance. Marple was operated by G3VMW and G3WPF and they used a TS930S transceiver and a 270ft c/f inverted-vee antenna. Verulam had a very extensive antenna farm with stacked 10m Quads, beams for 21, 14 and 7MHz and a range of dipoles. They also erected two Beverage receiving aeriels for the lf bands. They were a two man team with operators G3JKS and G4DJX. Their rig was another TS930S.

GRAVESEND TROPHY: Having missed out last year on winning their namesake trophy through being reclassified into the Open section, G3GRS/P (Gravesend) are in second place in the Restricted section and will be awarded the trophy. They used a Ten-Tec Omni-D feeding a 260ft c/f wire and the operators were G4BUO and G4FAM.

G6ZR MEMORIAL TROPHY: For some years the Addiscombe group, G4ALE/P, have been moving up the leader board and this year they managed to come second in the Open Section and win the G6ZR Memorial trophy. They also used Ten-Tec equipment, a Corsair-2, feeding a wide range of dipoles and a 2-element Quad for the hf bands. Operators were G3RQZ, G3SIX, G3UFY, G3VYI and G3WRR.

SCOTTISH NFD TROPHY: This is awarded to the leading Scottish group independent of section. For a number of years Glenrothes 'A' took the trophy as regular as clockwork, but last year Aberdeen 'A' were the winners. Not so this year as Glenrothes, GM4GRC/P, are back at the top. They were in the Open section, as was the second placed, GM3NIG/P. The leading Restricted entrant was GM3VEY/P.

st popular operating event in the UK contest calendar"

Posn Group	Callsign	OPEN SECTION							OSOs	Score
		1-8	3-5	7	14	21	28			
1 Verulam ARC A	G3VER/P	1144	379	801	682	601	1220	1031	4827	
2 Addiscombe ARC	G4ALE/P	836	386	657	909	539	1044	1018	4371	
3 Farnborough & DRS	G4FRS/P	836	413	652	451	354	1534	877	4240	
4 Scunthorpe ARC A	G3PDL/P	816	389	634	545	669	1124	927	4177	
5 Torbay ARS A	G3NJA/P	664	237	732	603	595	1334	937	4165	
6 Cornish RAC	G4CRC/P	754	316	527	389	600	1472	874	4058	
7 Plymouth RC A	G3PRC/P	588	229	170	693	726	1244	833	3650	
8 Southgate ARC A	G3SFG/P	752	359	672	571	440	800	836	3594	
9 Hull CG	G3ZRS/P	824	339	699	425	306	872	753	3465	
10 Reading & DARS	G3ULT/P	636	314	625	447	360	1062	748	3444	
11 Gleniothes & DARC	G4AGRC/P	480	317	183	676	191	1554	741	3401	
12 Norfolk ARC	G4ARN/P	876	346	701	284	212	878	689	3297	
13 Verulam ARC B	G4DUS/P	862	52	599	353	376	1038	652	3280	
14 Edgware & DRS	G3ASR/P	932	389	479	269	295	914	653	3278	
15 Chiltern ARC A	G3CAR/P	0	401	503	636	348	1340	740	3228	
16 Windy Yett CG	G3NIG/P	456	312	316	215	267	1544	650	3110	
17 East Notts CG	G3BNJ/P	858	241	641	375	174	806	649	3095	
18 Kilmarlock & Loudon ARC	G4OAX/P	400	213	234	397	451	1392	649	3087	
19 Strathmore Strikers CG	G3GBZ/P	664	381	345	317	375	964	664	3046	
20 Humberston CG	G3IYT/P	902	373	314	340	129	944	590	3002	
21 Gt Yarmouth & DARC	G3YRC/P	666	220	407	205	147	1154	524	2799	
22 Liverpool & DARS	G4ARN/P	698	246	296	384	435	734	606	2793	
23 Burton & DRS	G3NFC/P	576	282	209	166	119	1324	485	2676	
24 Leicester Poly ARS	G3SDC/Ps	1210	0	0	0	1421	0	623	2631	
25 Worthing & DARC	G3WOR/P	520	220	362	585	168	716	589	2571	
26 Bromsgrove & DARC	G3VGG/P	340	208	571	499	188	730	590	2536	
27 Ayr ARG	G4OAYR/P	24	140	211	396	424	1322	618	2517	
28 Chelmsford ARS	G4CUT/P	684	39	580	208	292	674	576	2477	
29 Iford Group RSGB	G3XRT/P	572	254	560	395	371	302	557	2454	
30 Welwyn Hatfield ARC	G3WGC/P	692	375	427	226	70	654	485	2444	
31 Greenock & DARC	G3SZR/P	372	77	156	364	406	988	520	2363	
32 Hornsea ARC	G4EKT/P	528	394	514	297	115	380	534	2228	
33 Sears CG	G4RSE/P	366	38	156	394	426	828	507	2208	
34 Thornton Cleveleys ARS	G4ATH/P	392	258	244	44	100	1118	420	2156	
35 Reigate ATS	G5LKP/Ps	246	154	334	509	387	488	513	2118	
36 Mirfield CG	G6CLU/P	476	429	220	271	328	376	452	2100	
37 West of Scotland ARS	G4AGG/P	0	0	0	2098	0	0	710	2098	
38 Surrey RCC	G6LX/P	0	0	0	2023	0	0	643	2023	
39 Maldenhead & DARC	G3WKK/P	682	0	0	0	0	1206	283	1888	
40 Shirehampton ARC	G4AHG/P	0	0	1133	423	0	28	510	1584	
41 Grimsby ARS	G3CNX/P	290	0	1092	0	0	0	383	1382	
42 Leicester RS A	G5UM/P	1318	0	0	0	0	0	191	1318	
43 Clifton ARS B	G3DIC/P	460	0	0	0	678	0	260	1138	
44 Clifton ARS A	G3GHN/P	0	0	1092	0	0	0	384	1092	
45 Southgate ARC B	G4KZD/P	946	4	0	141	0	0	195	1091	
46 Leicester RS B	G3LRS/P	0	0	84	267	26	662	207	1039	
47 Bangor & DARS	G3XRP/P	48	106	204	82	115	440	212	995	
48 Sutton & Cheam RS	G4ADM/P	832	0	0	0	0	0	119	832	

FRANK HOUSEN MEMORIAL TROPHY: This is awarded to the entrant having the highest checked score on 14MHz. There are usually several single-band entries in contention for this award and this year West of Scotland, G3AGG/P and SRCC (Croydon), G6LX/P both in the Open section, were joined in battle with Leicester Poly 'B', G3RIR/P in the Restricted, who spent most of the 24 hours on 14MHz. The West of Scotland, used a single TH6 yagi, while SRCC had three 8-element end-fed colinear beams in a star formation. Skip (or was it angle of radiation?) favoured West of Scotland, who managed to make a few more EU/P contacts than SRCC to give them the trophy. Leicester Poly 'B' had a 47 metre c/wire fed with 300 ohm ribbon and receive the Restricted band-leaders' certificate for the section. Their log contained 45 marked duplicates, a record, but they used a 'dupe' sheet and were careful in their checking so lost no points for this reason.

CERTIFICATES: Each of the trophy winners, the third placed station in each section, Farnborough in the Open and Downs in the Restricted, together with the band leaders in each section will receive a certificate of merit. Certificates are also awarded to the overseas stations in each Continent whose check logs showed they had given most points to UK entrants. These were

HA5LZ (Europe), Z23JO (Africa), VS6UO (Asia), VK5QG (Oceania) and N4LS (N.America).

CHECKLOGS

In addition to the overseas certificate winners shown above, the committee thank all those who sent in checklogs: C30CCA, EA6ZY, G2FSR, GM0CIT/P, OZ1DPW, ZB2IQ and several European societies who sent lists of their /P stations as an aid to checking. (We have done the same for them.)

INSPECTIONS

Visits by independent inspectors are always made to stations where a member of the HFCC is involved and also to the leading stations in the previous NFD. Others to be inspected are picked at random and this year 26 stations were visited. No problem in finding the sites or with the inspections was reported to the committee. The HFCC are very grateful for the efforts of the inspectors and for the time they devote to this task. Thank you one and all.

1-8MHz by BRS20249

This band, possibly not as productive as in 1987, was still attractive because of the bonus content which enabled many clubs to spend several

hours picking up hundreds of points. Open section band leaders Leicester RS 'A', G5UM/P, were on the band continuously from 1735 Saturday until 1405 Sunday, making 189 valid QSOs. The Runners-up, Leicester Poly ARS, G3SDC/P, remained on the band for nearly eight hours without a band-change making 168 contacts while Verulam ARC 'A', G3VER/P, made four visits to the band chalking up 154 valid QSO's. In the Restricted section, Marple CC, G3VMW/P took the top place by 14 points from a single session from the Downs CG, G4FNL/P who made three visits to accumulate their 130 contacts. Racial ARG, G3RAC/P, finished third with 126 contacts.

Conditions varied widely, depending on location, with heavy QRN being reported from stations in the southern half of the UK. Some dx was worked (VO, VE, W and Asiatic USSR) and there was good support from the Europeans with DL and HB portables available in plenty and a lesser number of /P stations from I, U and YU. Logs were generally presented very well, although there were problems with a few that had been photocopied. It was pleasing to note that the number of unmarked duplicates was down on previous years with only four on the band. This was undoubtedly due to the requirement for check/dupe sheets which must have weeded out a lot of the many repeat contacts that appeared as marked duplicates in the logs. Many points were lost because of wrong callsigns, possibly due to the transcription process from the original logs - D becoming O, H to M and U for V and vice-versa.

3-5MHz by G3MCX

As borne out by comments from many entrants, activity on the band was considerably down on previous years as a result of the excellent hf conditions. A few contacts were made at the beginning and during the last hour, but nearly all points were made during the night. Mirfield CG were the Open section leaders with 429 points and the Bredhurst RATS, who were a single-band effort led the Restricted section with 881 points. They found the band very slow-going, particularly on the Sunday morning with very little to work. Apart from UK/P stations, there were many EU/P stations active during the hours of darkness. Only a handful of dx stations were worked (mostly east-coast USA) and many entrants were disappointed that conditions did not allow contacts with the Asiatic Russian portables that were active on the other bands.

Many points were lost, 1545 in all, by entrants who had not troubled to properly check their logs after transcription for wrong callsigns and repeat contacts. It was noticeable that those who had observed the dupe sheet rule found most of the repeat contacts and had properly marked them - this saved the loss of a substantial number of points (there were a number of marked duplicate QSOs). Groups should ensure that the person who transcribes the log is familiar with amateur callsigns and some of the choice ones that appeared in the entries included G4FU8/P, GRIYT, O55WL, G3CARP and others equally silly.

Perhaps Bredhurst should have the last word, "Site is next to the sea wall. Radials are stones

ried to the ends and chucked into the pond – ie, ground system = English Channel."

7MHz by G3UFY

Conditions were generally described as excellent on this band and the leading stations were able to increase their scores over last year by some 15%, despite the overall band use by UK/P stations being down somewhat.

Paradoxically, there were no OSOs reported with South America or Africa, only a handful with Asia in the shape of UA9, while from Oceania only ZL3GQ made any real showing. Traffic from North America was also markedly down.

There was, however, no shortage of EU/P and the single band entrants were able to maintain a brisk scoring rate throughout the whole of the contest period.

Once again, a number of stations, including several of the leaders, have been let down by their log-keeping. Barely half of the groups on the band made use of the RSGB checklog/dupe sheet sent out to them with the NFD stationery, and many have paid the penalty. Three of the seven single-band entries were found to have unmarked repeat contacts for which points had been claimed. G3HIN/P failed to find two duplicates, GW8GT/P missed three and consequently moved some 30 places down the results table, G3HRC/P had SEVEN unmarked repeat QSOs and managed to claim points for no less than three separate contacts with G3CNX/P, who must have been getting a bit fed up at the end!

The overall band leader, the Rainmore CG, G3PJX/P, operated in the Restricted section. The leading Open section group was G4AHG/P, the Shirehampton ARC. The full results are in the table. No NFD would be complete without some unfortunate group receiving the unwanted attentions of the local fauna, and this year's victims were the Hesketh ARC, G0HAR/P. They lost 50 valuable operating minutes because a passing *thunk* got entangled in the feeders and brought down the antenna!

14MHz by G4IFB

Conditions on 14MHz were generally up this year, giving a total of 40940 points from 12900 contacts! Open entrants worked N.America all night and Pacific stations for over two hours in the early morning. The average score and number of contacts in the section was 471 points and 148 QSOs. Restricted entrants found plenty of EU/P stations to work and the average points/contacts were 356 and 115 respectively. Some 6% of all the points claimed were lost owing to log errors, including 20 unmarked duplicate QSOs (mostly from entries that did not submit a dupe sheet).

As reported earlier, West of Scotland ARC, GM4AGG/P and the Surrey Radio Contact Club (Croydon), G6LX/P, fought a hard battle at the top of the Open section. Both were single band entries and GM4AGG/P nearly blew it with an unmarked duplicate and a faulty generator, but with a few more contacts than Croydon, scraped home. Restricted section, Leicester Poly 'B' were the clear leaders with nearly a single-band entry, with just a few contacts on another band. Together with the two Open leaders, these three scored nearly twice as many points as any of the multibanders, proving that

		RESTRICTED SECTION											
Posn	Group	Cells	1-8	3-5	7	14	21	28	QSDs	Score			
1	Marple Contest Club	G3VMW/P	996	460	572	557	560	1686	998	4831			
2	Gravesend RS A	G3GRS/P	924	504	728	684	678	1042	10002	4560			
3	Downs CG	G4FNU/P	982	403	649	529	553	1270	955	4386			
4	Central Lancs ARC	G0FOX/P	744	288	645	583	572	1510	922	4342			
5	Mid-Beds CA	G4MBC/P	884	426	860	790	479	802	964	4241			
6	Racal ARG	G3RAC/P	944	403	665	434	491	1302	889	4239			
7	Lichfield ARS	G3WAS/P	774	392	735	561	330	1436	890	4228			
8	Cheltenham ARS	G5BK/P	724	241	528	594	282	1812	874	4181			
9	Crawley ARC	G3WSC/P	822	398	579	462	323	1114	744	3698			
10	East Barnet ARCC	G6KO/P	864	522	534	721	303	678	812	3622			
11	Hereford ARS	G3YDD/P	770	289	444	374	299	1162	671	3338			
12	Telford & DARS	G3ZME/P	488	339	555	301	396	1046	675	3125			
13	Thames Valley ARTS	G3TVS/P	664	306	328	267	323	1140	618	3028			
14	Aberdeen ARS B	GM3VEY/P	510	281	495	376	395	940	655	2997			
15	Gloucester ARS	G4AYM/P	560	386	308	323	188	1170	585	2935			
16	Red Dragon CG	GW8GT/P	410	205	465	328	547	918	744	2873			
17	West of Scotland ARS B	GM4TOQ/P	836	292	430	421	260	632	600	2871			
18	G4GZO CG	G4GZQ/P	462	224	654	304	223	836	573	2703			
19	Stockport RS	G6UQ/P	406	358	367	368	404	784	589	2687			
20	Mellon Mowbray ARS	G4FOX/P	550	197	332	457	208	942	560	2686			
21	Scarborough RC	G4BP/P	604	296	433	548	344	396	598	2821			
22	Cheshunt & DARC	G4ECT/P	566	8	474	195	298	1074	516	2615			
23	Oxford & DARS	G5LO/P	452	148	578	690	345	398	623	2611			
24	Weston Super Mare RC	G4WSM/P	208	232	516	858	440	340	669	2594			
25	South Manchester RC	G3FVA/P	492	334	304	504	128	824	551	2586			
26	West Kent ARS	G3WKS/P	628	228	518	300	203	670	526	2547			
27	Echelford ARS	G3UVE/P	324	722	404	250	143	704	569	2547			
28	Maldstone ARS CG	G3TRF/P	504	58	479	347	252	874	539	2514			
29	White Rose ARS	G4AD/P	680	273	503	240	208	566	499	2470			
30	Colchester RA	G4CRA/P	428	328	200	297	353	822	527	2428			
31	Western ARC IOM	GD3RFH/P	192	458	170	266	405	896	571	2387			
32	South Hants TS	G3DIT/P	544	318	316	300	165	732	470	2381			
33	Hesketh ARC	G0HAR/P	868	212	360	170	87	610	421	2307			
34	Scunthorpe ARC B	G4FUH/P	248	302	566	339	196	648	584	2299			
35	Mellion ARS	GW4LZP/P	488	339	402	115	111	664	425	2119			
36	Wyre ARS	G4UHI/P	368	144	415	213	231	744	443	2115			
37	Mid-Cheshire ARS	G3ZTI/P	192	170	302	226	292	862	439	2044			
38	Swansea ARS	GW4CC/P	356	114	351	193	315	702	428	2031			
39	Preslons ARS	G3KUE/P	380	406	324	488	199	252	515	2029			
40	Blackpool & Fylde ARG	G8GG/P	326	250	292	271	316	554	430	2009			
41	Sheffield & DARS	G3FJE/P	352	219	539	127	62	620	378	1919			
42	Chesham & DARS	G3MDG/P	596	172	0	271	323	546	400	1908			
43	North Devon Binder Cord CG	G4PGW/P	160	6	156	40	123	1414	339	1899			
44	Torbay ARS B	G0CEL/P	0	298	495	379	417	226	530	1815			
45	Crystal Palace & DRC	G2LW/P	326	122	313	182	462	354	410	1759			
46	Leicester Poly B	G3RIR/P	0	0	0	1684	4	0	561	1688			
47	Dynamics Hatfield Club ARS	G0AER/P	580	155	150	109	56	632	299	1682			
48	Easington ARS	G4APN/P	424	239	239	184	162	350	403	1598			
49	Radmore CG	G3PJX/P	0	0	1393	0	0	0	439	1393			
50	Darwen ARC	G4JS/P	112	0	173	246	122	638	265	1291			
51	G3XRO Contest Group	G3XRO/P	0	0	1288	0	0	0	400	1288			
52	Chilton ARS B	G0AZV/P	248	0	1027	0	0	0	437	1275			
53	Goole Radio & ES	G0GLE/P	364	143	145	48	59	468	286	1227			
54	Leyland Hundred ARG	G4TLH/P	0	48	195	334	414	222	313	1213			
55	Eccles & DARS	G3GX/P	0	0	1172	0	0	0	378	1172			
56	Cunningham & DARC	GM3USL/P	16	0	60	8	414	480	225	978			
57	Edinburgh & ARC	GM4HAM/P	0	0	188	175	369	190	257	922			
58	Bredhurst RATS	G0BRC/P	0	881	0	0	0	0	295	881			
59	West Manchester RC	G4MWC/P	16	133	380	238	67	28	229	862			
60	Plymouth RC B	G3VNG/P	0	122	226	274	145	92	255	859			

there are always points available on 14MHz for those that can spare the time.

21MHz by G4RWW

Conditions were excellent both for EU/P working and for dx, and a lot of that was worked with all continents being the 'norm' for many entrants. Many groups lost points because of poor logkeeping (or transcription) and there were the inevitable unmarked duplicates from entrants who failed to use a proper check/dupe sheet. The committee went to a lot of trouble to provide entrants with a proper checklog form that would double as a dupe sheet to help entrants. Sad to say a few groups thought they knew better and submitted a list of stations in the order worked which is useless for checking to see if there are unmarked repeat QSOs.

Most of the logs were well written except for a few that were atrocious with crossing-outs, alterations, faint photocopies, bad writing and one really horrible one in pencil. It should be obvious that if the adjudicator cannot read what has been written, then that QSO cannot be

scored. A lot of points were thrown away by entrants because of these shortcomings.

The band leaders were G3SDC/P, Leicester Poly ARS, operating in the Open section with a checked score of 1421 points, nearly double that of the leading Restricted entrant, Aberdeen ARS 'A', who had a final score of 756. The runners-up in the Open were Plymouth, G3PRC/P and in the Restricted, Gravesend, G3GRS/P.

28MHz by G4JKS

People began to run out of superlatives to describe conditions on the band this year. Most groups, predictably, began the contest on this band, but it was interesting to see what time on Sunday they returned for a second bite of the double cherry. The early birds, G3WKX/P, at 0122 working EA and I, were joined by G5LK/P at 0446.

The band leaders in the Restricted section, G5BK/P, made 287 QSOs, followed by G3VMW/P with 253. The leader in the Open section was GM4GRC/P, who had 244 valid

contacts and GM3NIG/P was second, even though they had 248 QSOs. The west and Scotland, again as last year, profited from long sporadic E openings and this is reflected in the top ten positions (open and restricted combined). Apart from the excellent short skip into Europe, an interesting selection of dx was worked, including USA, VE, LU, ZB2, 9J2, Z2, VP2V (to mention a few!)

Ninety eight logs were received and they ranged from excellent to illegible. All logs were checked for dupes resulting in 23 unmarked ones found, with three groups being responsible for 14 of them. Twenty-five groups sent in logs incorrectly scored which resulted in some loss of points, but in a number of cases generosity prevailed and an increase in claimed score resulted (in one by as much as 276 points!). Thirty-three groups had obviously not checked their logs before submitting them!

On a brighter note the Windy Yet CG said, "thanks for arranging lots of sunspots and sporadic E - more of the same next year please."

We will see what we can do.

EQUIPMENT AND AERIALS

In all 22 different types of transceiver appear on the cover sheets and the tally showed that once again the TS930S and TS940S were the most used with the Yaesu 101 series a close second and the TS430/440 next. ICOM were also well represented with virtually every model from the IC720 to the new IC781. Ten-Tec is also popular with the Corsair favoured. One group used the new JST-135, while another had a TS140 which had been received a few days before the event. Several groups used the older Heathkit transceivers and Drake was also in the picture with the TR4/4A and the inevitable Drake twins. Congratulations to G3PDL/P who had the only

fully homebrew station listed on the cover sheets.

The Open section surpassed themselves this year with bigger and better antenna farms. In



THE FARNBOROUGH 'A' TEAM (ABOVE) AND MEMBERS ROGER G8ZOU, BOB G4HZV, IVOR G4JBQ, MIKE G6GCI, GORDON G3CZM AND GEORGE G4IZB ERECTING THE THREE ELEMENT TRI-BANDER.

addition to the yagi and quad rotary beams, many groups erected large wire systems, rhombics, scerbas, hruce, colinear flat-top beams and other exotic arrays with many dB of gain. In the main, these proved to be excellent for dx working but their radiation angle was not always suitable for inter-Eu contacts so additional high-angle dipoles and wires were usually included as part of the 'farm'. In some respects, having a number of aerials available for the same band can be counter-productive as the operator is forced to make a choice. This can be daunting for those who have not had previous experience of working with narrow aperture arrays with sharp vertical lobes. In this respect the Restricted section entrants sometimes have the advantage as with only one aerial they have no choice and work what they hear. Verulam 'A' commented on this in regard to their two stacked Quads for 28MHz. They were able to feed the two together, or each one separately and in hindsight are not sure that this was an advantage as time was wasted switching from one to another, and then back again, to get the best received signal. Other groups have made similar comments, although most who had the use of the big wire arrays seemed delighted with their results and plan even bigger ones for next year.

The Restricted section used the same crop of centre-fed wires, trapped dipoles and G5RVs as has been reported in every NFD summary since the section was introduced. Checking back over the past ten years, it is perhaps significant that every winner of the section has used a near variant of the 270ft c/f wire and four of these were erected as an inverted-vee (as used this year by the NFD Shield winners).

It has become the custom in NFD for groups to use odd pieces of machinery to hold up aerials, but G3ZRS/P takes the cake as they



"A BRS member made sandwiches from a jar of grease!"

used a wide range of farm implements including bulldozers, bailers, tractors, hay lifts and other items to support and help erect their masts and towers. Another interesting aerial support used this year was a 60ft mobile crane which was being used in the construction of a silo on a nearby farm. The driver loaned it to the group and it supported a number of different wires and a beam. The sting was that the driver forgot to return to the site until late in the Sunday evening. As no one knew how to drive the beast and luff the jib, it was a long wait!

The Electricity Board lighting tower vehicle and mobile exhibition bus we mentioned in earlier NFD reports were again in use this year, together with the usual caravans, car-campers, vans and tents (in that order).

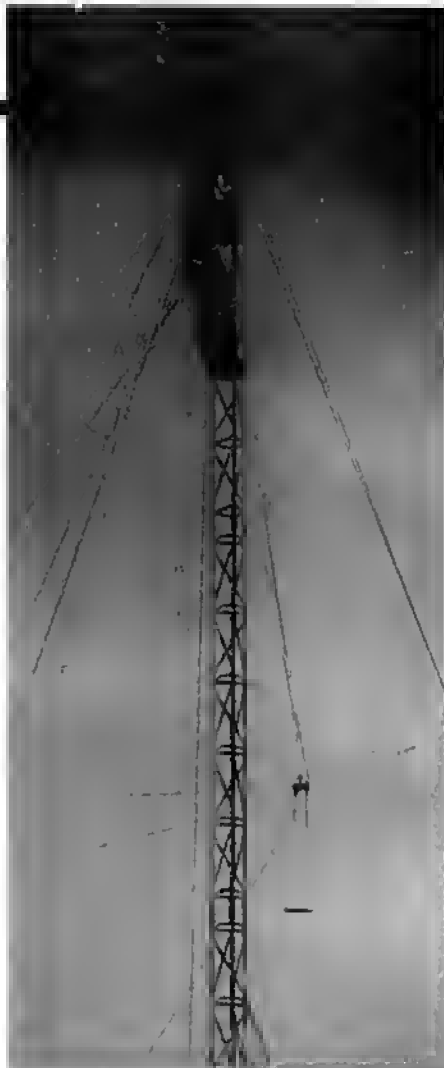
There were fewer complaints about generators, so perhaps the comments in the 1987 report did some good and groups checked and tested them before the event. Several more groups were using gas-driven power units this year and were pleased with the results.

LOGS

As reported in the individual band summaries, the standard of logkeeping varied widely from very good to the impossible. Several groups mixed up their sheets for different bands, while others (attempting to save time) did a cut and paste job using the original contest logs. This would have worked, except that some of them had overlaps, others which had been photocopied were too faint to read in places, while a few were really grim with many alterations that were impossible to decipher. A few logs contained 'impossible' calls while very many had call signs or RST/No. errors. Addition seems to be another problem for some groups and a number of logs had to be rescored, some up and some down!

Unmarked duplicate contacts are the curse of both the contest entrant and the adjudicator. Just one unmarked duplicate loses the equivalent of 10 contacts plus the points claimed. In the 1988 NFD there were over 70 unmarked repeat contacts in the logs from 41 groups and over 3200 hard-won points had to be deducted from the claimed scores because of this. The committee regret that they had to exclude three groups because they exceeded the number of unmarked repeat contacts specified in NFD Rule 8. These were: Havering G4HRC/P (12), North Bristol G4GCT/P (9) and Glenrothes 'B' GM3ULG/P (6). What a waste of effort!

The committee cannot understand why groups battle hard for 24 hours to make contacts and then allow the person who prepares the logs to throw it all away through lack of proper checking. If you use the RSGB form (or something similar) the repeat contacts stick out like a sore thumb and it is necessary to mark them and send in the check form with the entry. The introduction of RSGB check/dupe form is an attempt to reduce and eradicate this terrible waste of effort. Log preparation is a key feature in contesting and it should never be left to an inexperienced member of the group to transcribe the logs and check for repeat contacts.



THE DIZZY HEIGHTS - RUNNING REPAIRS FOR A MEMBER OF THE SCUNTHORPE ARC, 10 MINUTES BEFORE THE START (ABOVE) AND THE AYR AMATEUR RADIO CLUB (BELOW)



"Our logs are perfect - it's the others you need to check"

COMMENTS FROM COMPETITORS

The Editor has agreed to let us again include this section, which was so popular with groups. There are still limitations of space which prevent listing all the 130 different comments received this year, but the following are typical (apologies to all those who are not included).

'Decided to return to our old site 1400ft up in the Pevinnes. It hadn't changed - rain horizontal and hail before the start' (Marple)

'Rain, thunder and hailstorms; sparkgaps gave a firework display, but certainly proved effective' (Croydon)

'Sparkgap and static discharger were not needed' (Gravesend)

'A blew a gale during the night and it was freezing cold' (Western I.A.M.)

'It did not rain' (Liverpool)

'Torrential rain and hail stopped by lunch time in Scunthorpe' (Scunthorpe)

'Saturday turned fair and it was a fabulous weekend' (Ayr)

'No complaints about the weather' (Cornish)

'Violent thunderstorm with direct strike two fields away' (Hford)

'Lots of sunshine' (West of Scotland 'B')

'Weather good, dx, generator behaved, company great. See you next year' Aberdeen 'B'

'Our generator did not take kindly to a petrol/oil mix' (Plymouth)

'Talking of keys, what a shower! One kept missing dots, another saw dots on its own and one refused to work at all' (Ayr)

'How about suggesting that those who are going to use borrowed keyers have practice sessions before the contest' (Gravesend)

'Transceiver lost a p.a. transistor in last hours of the contest. We improve our score every year, but so does everyone else' (Scunthorpe)

'YL joggers kept group's spirits up' (Goulte)

'Vandals pulled down antenna during early hours. Left with 17ft high cliff during rest of contest and lost 90 minutes operating time' (Glenrothes 'B')

'What a super weekend' (Bangor and many others!)

'This was our training station but where were the trainees?' (Leicester 'B')

'Marvellous support from club members who do not operate in this contest.'

'What a good effort by all concerned' (Central Lancs)

'Our logs are perfect, it's the others you need to check' (Plymouth)

'Our site had been spread with manure a few weeks prior to NFD and the smell level reached \$9+ after every shower of rain' (Crawley)

'The field had not seen cows for a twelve month, so you can imagine how clean our shoes were' (Ayr)

'We have returned to the Restricted section after many years in the Open due to lack of bodies. Result - best NFD ever!' (Raed)

'An hour or so into the contest it was realised that our Rhanbic and Brice were giving too low an angle for the prevailing conditions. At this point we shing up a half-sized GSRV at 10ft off the

ground and it worked a treat' (extract of a four-page mirth-filled report from Worthing)
'What happened to the Inspector?' (Cheltenham - and five other groups)
'We have to get organised next year' (Western, IoM and many others).

The 5th Manchester group suffered from a sudden change of priorities as the wife of their team leader (G3SVW) presented him with a new daughter just before the start. He blames the 1987 SSB FD for the timing (exactly nine months to the day!). It would not be fair to name the groups who had a member 'retired' but when he sat up a 100watt soldering iron while repairing a feeder, the group who filled their diesel generator with petrol, the club whose 'electrician' forgot to fill the sump before starting the generator and are now faced with an expensive repair, another group who suffered when a BRS member made sandwiches from a jar of grease thinking it was peanut butter, the club who erected their mobile tower in heavy rain and found their switch box, motor control and other items half-way up the tower owing to sagged cables, or the group who had their tent pulled from over them at 0210 when the car of an operator going off duty got hooked up with a guy! Last, the committee were very sorry to hear of the group who had their small Honda generator stolen in the wee hours (while it was running - all the lights went out and they thought it had run out of fuel!). This should be a salutary warning to all of us who locate our generators some distance from the operating position. Let us hope the generator was fully insured.

IN CONCLUSION

The Committee would like to thank the many clubs who have written to say how much they appreciate the work put in by the HFCC NFD group. With the record number of contacts achieved this year, checking was a heavy task which took over five weeks of spare time (evenings and weekends) for the team of adjudicators G3MCX, G3UPY, G4IFB, G4JKS, G4RWW and BRS20249. Also in the team were G3SLI, who looked after the entry procedure, inspections and the final tabulation and your scribe who refereed the proceedings and edited the final reports. Thanks are due to the RSGB staff who produced the check/dup sheet at short notice and distributed the contest stationery. For the record the dup sheet was designed by G4JKS, assisted by BRS20249 in the production of the print master and they were also involved in the design of the special 75th Anniversary certificate which has already been sent to all entrants.

A league table will be published based on a comparison of the number of QSOs achieved by the top ten stations in each section for the various countries that participated in the FARU Region 1 cw field day. This will appear in a future issue of Contest News. The next FARU Region 1 cw FD (NFD) will be on 4/5 June 1989 with no change to the start/finish times (1500gmt) or the rules. We can only hope for better weather (in the south and west) and a repeat of the superb 1988 conditions. Those groups who make NFD a way of life had better start planning now! The committee hopes that there will be a really bumper entry. See you next year? G6LX

JOHN ALLAWAY G3FKM

Are we really doing the right things in the WARC bands? I attended a meeting held by NRRL (the Norwegian society) recently and there was much discussion during which everyone decided that 10MHz was being grossly under-used and that something has to be done in 1989, because, if we don't, in the next WARC we shall have demonstrated that we didn't really need it at all! The same applies to 18 and 24MHz but with the current UK restrictions I don't think that UK amateurs can do much. How about some kind of not-too-competitive contests in awards?

FM ON 29MHz

HA5WH reports that there is now an experimental fm repeater working from Budapest in the 28MHz band. Its input frequency is 29.580MHz and output is on 29.680MHz. Output power is 70W into a vertical antenna 0.625 wavelengths long. Its callign is HA5BME and it uses carrier access sending back a short carrier pulse on a short carrier request. Peak deviation is 3kHz and channel width 9kHz.

A reminder that the Southern IoM FM Group is still in existence and takes special interest in fm activities. It tries to keep interest alive in the band even when most have deserted it during the long summer minima. Its Newsletter lists G4XRU as editor and gives G4XRU (33 Hayling Rise, Worthing, W Sussex, BN13 3AL), as an address in contact. The Ten-Ten organisation has similar aims and Phil Dykes, G4XYX, 68 Egmont Rd, Paule, Dorset, BH16 5AP, is its contact man.

DX NEWS

Some unfortunate confusion crept into the August column concerning Steve Lowe's visit to the Cocos Keeling Is. His callign is VK9YG - not VK9YC (whose station he is due to use) and operating frequencies 21.295 and 28.595kHz and not as shown. (The other frequencies listed are

correct). Steve will use the AX9YG call inside the CQWDX Contest and VK9YG during the contest on 29-30 October. He emphasises that he will QSL via the bureau but would much prefer the direct route - which is in any case obligatory for listener reports.

According to *JARI News* No 2 as of 31 March 1988 the Telecommunications Bureau of the Ministry of Posts and Telecommunications had issued a total of 1,608,128 amateur radio operator licences. The breakdown of these by licence class is: First class 12,615, Second class 48,224, Telegraph class 89,313, and Telephone class 1,457,976. In addition 825,153 amateur radio station licences have been issued. As at 7 March 1988 JARI reported its membership to be 143,626.

KD7P has a two year assignment on Guam as KD7P/KH2. He promises activity in all bands and will be on during contests when he will sign KD7P/NH2. Peter, OH1RY, and Vili, OH2BAZ, begin a Pacific tour in mid-October. Provisional details give FO5, ZK1, 3D2, FW, YJ, A35, 3D2, and ZK2 as the route to be followed. For the CQWDX SSB Contest OH1RY will be in Vanuatu and OH2BAZ in Tonga.

Wes Lindquist, PY5FB/PP8 is in the rather rare Brazilian province of Amazonas and is likely to be there for two years or so. In major contests he will use the callign ZZ8WHL. YN3EO, who has given so many a first Nicaraguan contact is due to return home to the GDR this month.

Hungarian amateurs now have access to the 1-8MHz band and may use the segment 1.830 - 2.0MHz with cw only and 10W input. 10MHz has also been released to them and they are allowed all modes from 10.1 to 10.15MHz. F2DX is no longer in France and he has had to transfer his QSLing work to others. QSLs for FT5ZB, FT2XE, 6W2EX, FO0AQ, and TK5EP should now be sent to F6ESH (see 'OTH Corner'). QSLs for cw QSOs with TP2CE/TP0CE go to F6FSQ, and for contacts with F2DX/F1, F2DX/FS, F2DX/PJ5, and F2DX/PJ6

BOB DAVIDSON VK9ND (LEFT) AND DAVE MILLER VK9LU (NZ) ON NORFOLK ISLAND DURING 'BOUNTY WEEK' 1988. THIS CELEBRATION MARKED THE BICENTENARY OF EUROPEAN SETTLEMENT ON NORFOLK ISLANDS.



to F6BFH. FTSZB is said to use 10,101kHz cw often around 1200. He leaves Amsterdam in November but will leave his antennas for use by FT4ZD who will replace him. FR5ES was expected to be on Trumelin Is for a period beginning in mid-August. FR4FA/J, on Juan de Nova has been worked on 28MHz and is expected to be on the island for a little longer. 5V7SA from Togo is sometimes on 14,155kHz at 2200 and also checks into the W7PHO Family Hour on 21,345kHz at 1900. There is hope for those needing Mozambique - C9MKT will be active for three days each month until mid-1989. G4ZYQ reports that WB4LFM keeps a schedule with 5V7WD, TL8HB, and TL8HW daily on 21,325kHz at 1300. WB4LFM himself is hunting Scottish districts and 5V7WD looking for Welsh counties. I have heard from G3IFB that he is not the QSL manager for either ZD8RP or ZD8MAC. Despite repeated requests for logs they have not been forwarded. He is, however, handling QSLs for VS6UO and in this case cards must be sent to him direct and not via the bureau. VP8RAF, at Mount Pleasant, Falkland Is, is very active on Sundays at 1700 and on 21,295kHz.

Colin, G0FCB, worked BY7HY on 21MHz ssa recently. He received a most interesting letter from operator Peng Chi-tao, together with a very attractive QSL and pennant. Chi-tao is an English teacher in middle-school and became an

amateur in May this year when the JARL team presented the club with a TS-940S transceiver. At present he is the only operator of the station which has a four-element beam and should by now have become a regular on or near 21,225kHz between 0800 and 1000.

CONTESTS

DARC FAX Contest

0800-29 October to 2000-30 October

The hf band section of this contest covers 3-5, 7, 14, 21 and 28MHz, and there is a listener section which covers the vhf section as well. Exchanges consist of name, QTH, RST, and QSO number (from 001). Only the fax mode may be used. Each different country worked on each band counts as a multiplier and for this purpose the DXCC and WAE country lists are used. In addition each call area in JA, PY, VE/VO, VK, W, ZL and ZS as well as UA9 and UA0 also count as a country. Each confirmed QSO counts one point. The final score is the total of QSO points multiplied by the sum of multipliers from each band. Logs must reach Hans-Juergen Schaak, DJ8BT, Hammarströmsgatan 174, D-6000 Frankfurt 50, F.R.Germany by 31 December 1988. Note that commonly used fax frequencies are 3,601, 7,040, 14,232.5, 21,150, and 28,200kHz (each plus or minus 5kHz).

In the 1987 Scandinavian Activity Contest (ex-

section), single-operator G3ESF scored 24,100 points, G4OBK 21,070, G5LP 20,160, G4IQM 18,320, GM4SID 15,400, GW3HCL 15,265, G4ODV 13,510, GM3CFS 10,096, G4ETJ 5,184, and G3SXW 4,895. In the phone section (single-operator) G4CHP scored 14,596 points, G4YEK 7,686, GM4WEW 6,490, G4IQM 5,565, and G4ACY 1,560. G3SRT/P scored 9,715 points in the multi-operator single-transmitter class. In the listener section RS87156 came world 10th with 9,940 points and RS587949 20th with 3,420. I apologise in advance for any errors in this list but it does look as there may be some misprints in the published list received from SRAL.

XI Concurso Iberoamericano

2000-8 October to 2000-9 October

Single and multi-operator and single-operator QRP (less than 5W output) classes. All are all-band, 1-8 to 28MHz phone only. Exchange RS plus serial QSO number (from 001). QSOs with Latin America count three points, with other countries one. The multipliers are the 'Latin American' dxcc countries. For this purpose these consist of: CE, CO, CP, CR, CT, CX, C3, C9, DU, EA, HC, HI, HK, HP, HR, HT (= YN), KP4, LU, OA, PY, TG, TI, XE, YS, YV, ZP, 3C, and their dxcc dependencies. The final score is the total of points from all bands multiplied by the sum of multipliers from

HF - LAYER PROPAGATION PREDICTIONS FOR OCTOBER 1988

The time is presented vertically at two-hour intervals 000000gmt for each band, ie 00=0000, 02=0200, 04=0400 etc. The probability of signals being heard is given on a 0 (indicated by a dot) to a 9 scale; the higher the number the greater the probability with 1 meaning 10 to 19 per cent of days, and so on. Additionally 50MHz F-layer and 1-8MHz openings are indicated by a plus (+) sign in the 28 and 3-5MHz columns respectively.

Time / GMT	28MHz 000001111122 024680246802	24MHz 000001111122 024680246802	21MHz 000001111122 024680246802	18MHz 000001111122 024680246802	14MHz 000001111122 024680246802	10MHz 000001111122 024680246802	7MHz 000001111122 024680246802	3-5MHz 000001111122 024680246802
•• EUROPE								
MOBOW	...57764...	...1788841...	...3999985...	...68888971...	211877778963	866654457898	986322224789	+53.....4++
MALTA	...665441...	...887763...	...39988961...	...59889984...	331877778985	987754457999	998522225799	+*2.....24+
GIBRALTAR	...243221...	...475452...	...7887861...	...9988983...	114877778983	775865556898	999742224799	+*4.....4++
ICELAND	...1321...	...35441...	...168774...	...4888871...	...78888961...	651376567897	997743335688	+*4.....235+
•• ASIA								
OSAKA	...53...	...1751...	...3873...	...487421...	...364444432	...131124774	...1...2561	.....23.
HONGKONG	27872...	388841...	4888742...	37767641...	1...44457863	2...1124796	...1...2574	.....25.
BANGKOK	488885...	5888971...	4888884...	24767872...	2...14357974	4...1124798	1...2576	.....234
SINGAPORE	488885...	5888972...	4888895...	247678721	2...14357975	3...1124797	1...2575	.....252
NEW DELHI	488885...	5888972...	4888895...	247678721	2...14357975	3...1124797	1...2575	.....252
TEHERAN	588885...	7888972...	7467891...	12645678832	653512357987	974...24799	851...2578	.....25+
COLOMBO	5888861...	6788982...	55778961...	12645678832	52...2357987	72...24799	5...2578	.....25+
BAHRAIN	688885...	7888972...	1766788521	22534678853	74521347998	973...14799	851...2578	+2.....25+
CYPRUS	5988872...	7999985...	888899831	212877889963	766755668999	997422336899	8851...13688	+*2.....3++
ADEN	6888872...	77789851...	1655788842	412533578975	8652...247999	983...14789	861...2578	+3.....245
•• OCEANIA								
SUVA/B	...24...	14661...	477733...	6767651...	36545772...	15321244...	...21...22...	.....
SUVA/L	...21...141	11431...262	2246531...373	221776431753	1376333473...	...1531...144...	...21...12...	.....
WELLINGTON/S	...2542...	47641...	1787632...	38767651...	56545772...	43212451...	...11...22...	.....
WELLINGTON/L	...2542...	47641...	1787632...	38767651...	56545772...	43212451...	...11...22...	.....
SYDNEY/B	286651...	4987731...	6987863...	48767861...	364357851...	14311341...	...11...22...	.....
SYDNEY/L	286651...	4987731...	6987863...	48767861...	364357851...	14311341...	...11...22...	.....
PERTH	588632...	6887641...	6787741...	11466678632	11264222563	2311364...	...1...141...	.....
HONOLULU	588632...	6887641...	6787741...	11466678632	11264222563	2311364...	...1...141...	.....
•• AFRICA								
SEYCHELLES	5688743...	66888651...	1555788842	422323678975	853...347999	961...14789	83...2578	+.....24+
MAURITIUS	5888873...	77889962...	2655789853	422433678986	8531...347999	851...14799	72...2578	4.....25+
NAIROBI	58778841...	677799731	21755589964	532533378987	9852...47999	984...14799	861...1577	+4.....255
NARARE	46778862...	1677799842	32755589976	642533378998	9853...47999	985...14799	872...1578	4.....255
CAPETOWN	266789731	147778962	3366567998	75274337998	99651126899	9962...2799	873...1578	4.....24+
LAGOS	198889741	1128778963	43575568996	643473234898	99735...15899	9962...2799	873...1578	4.....24+
ASCENSION Is	88667741	197778972	33186556996	643473234898	99735...15899	9962...2799	873...1578	4.....24+
DAKAR	7988884...	188778972	33186556996	643473234898	99735...15899	9962...2799	873...1578	4.....24+
CAS PALMAS	69878872...	88889984...	1197557995	563385335898	99735...15899	9962...2799	873...1578	4.....24+
•• S. AMERICA								
St. BRET LAND	1578874...	136888862	231157777785	563477665677	888764332357	688731...24	46641...1	33.....
FALKLAND Is	2788884...	48888862	231157777785	563477665677	888764332357	688731...24	46641...1	33.....
R DE JANEIRO	1865674...	29766872	22158653785	55427733587	9986641...269	99731...38	88841...16	+5.....3
BUENOS AIRES	1788884...	38877861	12168755684	45327733477	9886642...147	99731...15	78841...3	4+5.....
LIMA	87774...	887751	23214632246	78734431...16	78734431...16	88641...3	88641...3	3+52.....
SOGOTA	87774...	887751	23214632246	78734431...16	78734431...16	88641...3	88641...3	4+42.....
•• N. AMERICA								
BARBADOS	687774...	887761	18755583	23214632246	78734431...16	998631...27	88741...4	+542.....
JANICA	87773...	88775...	3865563	2214642255	67623431...27	8986321...4	78741...4	+442.....
BERMUDA	287773...	488775...	7866773	2214644575	675145311258	9985321...26	88741...4	5552.....
NEW YORK	67762...	178774...	3776772	115665674	664125332357	8985321...25	88841...3	4552.....
MEXICO	7652...	18763...	486542	11574333	56414134114	59854211...1	38841...3	552.....
MONTREAL	57652...	178774...	3787762	115666674	66325343367	89843211...136	88841...3	4552.....
DENVER	2541...	4762...	67641	1166543	5521244224	5884311112...	26841...3	552.....
LOS ANGELES	53...	1752...	38631	1157532	452245212	377431112...	15741...1	25.....
VANCOUVER	2...	241...	563...	1127741	441136433	46743111312	14741...1	4.....
FAIRBANKS	2...	241...	563...	1127741	441136433	35532124433	12441...11	2.....

The provisional mean sunspot number for July 1988, issued by the Sunspot Index Data Centre, Brussels, was 112.6. The maximum daily sunspot number was 161 on 30 July and the minimum was 76 on 25 and 26 July. The predicted smoothed sunspot number for October, November, December and January are respectively: (classical method) 112, 119, 126 and 133; (SIDC adjusted values) 107, 118, 126 and 136.

QSL BUREAU

SOME MEMBERS STILL AREN'T SORTING THEIR OUTGOING CARDS ALPHABETICALLY BY PREFIX. THE QSL BUREAU IS IN DANGER OF GETTING BOGGED DOWN WITH BETTER RADIO CONDITIONS. PLEASE FOLLOW THE RULES - IT'S IN YOUR OWN INTEREST.

all hands. Awards will be made to top scorers in each dxcc country and everyone who makes more than 50 QSOs can claim a participation certificate. Log time, callsign, numbers sent and received, if new multiplier, and points claimed. Duplicates must be clearly marked. Mail before 30 November to XI Concurso Iberoamericano, Gran Via de les Coris Catalanes 594, 08107 Barcelona, Spain, or to ST de URE, PO Box

262, 08400 Granollers, Spain. Listeners may enter and should follow the transmitting rules for scoring purposes but note that any one station may not be logged a second time until at least five intervening contacts have been made, or provide more than 15% of the QSOs logged. Non-Latin American listeners count three points when at least one of the stations in a logged QSO is in Latin America. In the 1987 competition in *Category B* (non-Latin America) G3SJX scored 6,330 points, G3ZRH 4,550, GM4ELV 3,133 and G4NBN 1,782.

CQ WW DX Contest (phone)

0000 29 October to 2400 30 October

Just a reminder - the rules were given last month.

In the 1988 UBA Contest G0EBD seems to have been the only UK entrant in the cw event and to have scored 108 points with his single-band entry on 14MHz. In the ssb section Roger Hunter, GW40FQ, is to be congratulated - he won the First European Community Trophy by scoring 23,381 points in the single-operator multi-band class.

WIA has kindly sent me a copy of the results of the 1987 VK/ZL/Oceania Contest. In the cw section G5MY was fourth in Europe with 704 points and in fact was the only UK entrant. Disappointing.

ON Contest 1988

0700-1100 2 October (ssb)

0700-1100 9 October (cw)

Both are 3-5MHz only. Only contacts with ON and DA stations count. Exchange RS/T plus serial QSO number (from 001). ON and DA stations will also give their club codes. Each QSO counts three points and each different club worked counts as a multiplier. The winners in each section receive an award. Listeners may take part and should log time, callsign of station heard and code given, and the callsign of the station being worked. Points as for the transmitting section. Send logs not later than three weeks after the contest to Walter Leen, ON5WL, Borgstraat 80, B 2880 Beerzel, Belgium. There is a vhf section of this contest too and this takes place at the same times on 16 October - this is on 144MHz phone and cw mixed.

RNARS Activity Contest - 1988

0600-1800 19 November (ssb)

0600-1800 20 November (cw)

Open to all but mainly for RNARS, INORC, MF and MARAC clubs. Listeners may enter. Stations call "CQ Naval" and give RS/T plus their club number. Others give RS/T plus serial number from 001. QSOs with Naval members are worth 10 points and with others one. There is a bonus of 10 points for each dxcc country worked on each band. Preferred QRGs are 3,520, 7,020, 14,052, 21,052, and 28,052kHz (cw) and 3,740, 7,050, 14,335, 21,360, and 28,933kHz (ssb). Send logs to RNARS Contest Manager, Mick Puttick, G3LIK, 21 Sandyfield Crescent, Cowplain, Portsmouth, Hants, PO8 8SQ.

W6WX BEACON STOLEN

In a press release dated 4 August the N. California DX Foundation announced that during the

afternoon of 22 July thieves entered the locked trailer at Stanford University which housed the Foundation's 14-1MHz power-stepping beacon. Only the Kenwood TS-130, its power supply and the special controller were taken. Other equipment and special tools located nearby were not taken. W6WX had been on the air continuously for almost ten years as part of a unique beacon network which transmitted for one minute out of every ten at carefully controlled power levels ranging from 100W down to 100mW. DX and propagation watchers use the network to determine the existence and quality of band openings to various parts of the globe. The bulletin also announced that Rusty Epps, W6OAT, and Stan Kiesel, K6UD, have been elected respectively as the new President and Vice-President of the NCDXF. The rest of the



board consists of W6DU, WB6UOM, K6TMB, W6OSP, W6SZN, N6HR, W6QHS, and KA6W. The Federation is entering its eighteenth year of supporting amateur radio activities. Finally there is the good news that LA DX Group has received sufficient donations to be able to return US \$10,000 of the Foundation's loan of \$30,000 towards the cost of its Peter I Is expedition.

AWARDS

To begin with - a word of warning. John Kay, G3AAE, who enjoys the challenge offered by some of the more unusual certificates, has been steadily working towards the Worked All Hawaii Award ever since I mentioned it in the December 1981 column. Not an easy one this because it needed QSOs with 100 different

PRESENTATION OF THE FIRST EUROPEAN COMMUNITY TROPHY TO ROGER HUNTER, GW40FQ AT THE UBA AGM IN MAY.



ISLAMIC REPUBLIC OF IRAN
ZONE-21

EP2HZ
TO AMATEUR RADIO

G0FCB

HASSAN-ZOHOURIAN PO. BOX 18765-3133, TEHRAN-IRAN

DATE	UTC	MHZ	RSI	MODE	QSL
12/4, 88	2018	14	59	SSB <input type="checkbox"/> CW <input type="checkbox"/>	PSE <input type="checkbox"/> INX <input type="checkbox"/>

RIG: HOME MADE ANT: INPUT 50 WATT

BEST 73 TO YOU AND YOUR FAMILY I HPE CU AGN



KH6s scattered throughout some rather rare islands. Having almost reached his goal John wrote to the sponsors (the Big Island ARC of Hilo) to confirm the requirements only to be told that the club officials had changed and that "the club is not responsible for the award". So – if you are working for a really difficult award and this is taking a long time it might be a good idea to check with the sponsors now and again....

European 1992 Community Award

Issued by the European Community this is available to licensed amateurs and listeners with effect from 1 January 1989. It is necessary to work (hear) 144 different stations including at least six but not more than 20 from each member country. QSOs made during the UBA contest may be used for credits and in this case a minimum of two and maximum of 24 may come from each country. If applying this way the application must be included with the contest entry and a missing SV or LX station may be replaced by two other QSOs with that country made outside the contest. Combined logs from up to four consecutive UBA contests may be used for this purpose. Apply by sending a written request signed by the applicant and certified by two other licensed amateurs, a list of the 144 QSOs giving date, call signs, report, band, and mode, and include the fee of seven pence, US \$4.00, or equivalent, together with the name, call sign, and address of the applicant and the witnesses. Apply to UBA HF Award Manager, Van Campenhout Mat, ON5KL, Hospicestraat 175, 9080 Moerbeke-Waas, Belgium. Countries which are EEC members are Portugal, Ireland, Denmark, Greece, United Kingdom, F.R.G., France, Belgium, Spain, Italy, Luxembourg, and the Netherlands.

RAFARS Golden Jubilee Award

To celebrate the Golden Jubilee of the foundation on 1 April 1938, of RAFARS. The award is for contacts made with, or confirmed listener reports from, RAFARS members between 1 April 1988 and 31 March 1989. The basic award

1988 28MHz COUNTRIES TABLE

G3VOF	165	G4NXG/M	88
G4XAH	162(ssb)	G4OBK	78
G0DNV	129	G4JBR	50
G4MUW	128(ssb)	GW4TEJ	43
G0ELY	120	G4DXW	42
G04XTT	114	GM4CHX	42
G4ZYQ	100	G0FYD	38
G3SYG	99	G4OUT	34(cw)

10MHz COUNTRIES TABLE

	All-time	1988
G3PJT	106	36
G3SED	71	32
G4XRV	31	31
G3JUG	102	18
G4VDX	71	-
G4YWG	64	-
G4OBK	57	-

is given for the first 50 points scored and further endorsements are available at 100, 150, 200, and 250 points. Each QSO on ssb with a member in one's own country counts two points, and on any other mode three. Three points are scored by working a member in another country on ssb and on other modes four. QSOs with the special stations using the GB prefix and RAF or RFC suffix, or with others designated by RAFARS count five points. Note that QSOs made on frequencies higher than 70MHz count double. A member or special station may only be worked once (unless the latter is at a different event). It is advisable to use the official application form which is available from the Award Manager, Squadron Leader A.J. Gilchrist, G8BVJ, 6 Mansion Hill, Halton, Aylesbury, Bucks, HP22 5NL. The award costs one pound or nine pound 50p if to be posted overseas. Note that applications will not be dealt with if received after 31 July 1989.

BAND REPORTS

More words of encouragement from G8KG this month – "On the solar front the news is of steady but rapid progress rather than drama. The provisional monthly sunspot number for June turned out to be 101.8, exceptional for a 21-month cycle, and the number for July was even higher at 112.6. Incidentally, the monthly mean solar flux for June was 140 sfu and 137 as previously reported, while that for July was 150. The highest daily value was 193 sfu on 1 July and daily values for the first eight days of August were all between 155 and 182.

Currently the forecasts of the peak smoothed monthly sunspot number, including that quoted in *Technical Topics* in August which was for the annual mean, seem to be settling down around a most probable value of 170-180 in late July 1989, the second highest on record, though Cycle 19's prime position is not yet wholly secure. There can be no doubt that the bands from 14 to 28MHz will be lively this winter – just how lively depends on the pattern of solar activity in the coming months. It must be remembered that activity nearly always progresses in a series of sharp upward movements lasting typically three months followed by pauses or even temporary recessions. The June-August burst may well be followed by such a pause but it still seems likely that monthly numbers will be at least in the 100-200 region and that daily solar flux will sometimes top the 200 mark giving MUFs well above 30MHz."

Smithy concluded his letter by saying that Boulder's reaction to this will not be in until late August but it will only need another month or two with figures like these to start us all guessing that the mighty Cycle 19 is in danger of eclipse...

Thanks go to the following for writing in this month: G2CIL, G2HKU, G4QK, GM3CSM, GJ3EML, G3s GVV, IFB, KSH, YRM, G4EHQ, GW4KGR, G4s LRS, MUW, NXG/M, OBK, SJG, GW4TEJ, G4XAH and G0HGA. As usual calls of stations using cw are in italics:

3-5MHz: 0200 *LU8DQ*, 0300 *PJ0M*, 2100 *ZS1MH*, 2300 *DK2OY/TF*, *UF6FH*, 7MHz: 0200 *P40GO*, 0500 *CM*, HD8DZ, ZL2, SV7WD, 2100 *4K1A*, 2200 *DK2OY/TF*, *YB20AR*.

10MHz: 0300 *SB4OG*, 0400 *NP4Y*, 0500 *N4PHH/9*, *VK2-VK3*, *ZL2AGY*, 0600 *VK2-VK5*, 1800 *UA9MD*, 1900 *JG6MQ1*, 2000 *JAI*, 14MHz: 0400 *NL7GP*, 0500 *WB6QPG/HIR2*, *KH6IJ*, *NN7U*, *TA3D*, *T31JS*, *T5GG*, 0600 *HD8DZ*, *ZK1DD*, *ZL5BKM*, 0700 *CE0ZIG*, *VR6TC*, *YY5M*, *ZK3RVC*, *ZL*, 0800 *KH6*, *KH6LW/KH7*, *KL7*, 0900 *C43T*, *4K0D*, 1600 *AH9AC*, *KA2CC* (M. Torishima), *KL7XD*, *VS6AD*, 1800 *JA*, *VU2QQ*, *YB*, 1900 *AP2SQ*, *BY4WNG*, 2000 *TU2BB*, *VP8BRT* (S.Orkney), *VP9LR*, *4FIRGA*, *4J1FS*, 2100 *C9MKT*, *FH5EF*, *S0RASD*, *VK*, *ZD8AE*, *7X4VUK*, 2200 *KL7Y*, *OH0/K8MFO*, 2300 *ST2KR*, *9K2KW*.

21MHz: 0100 *K7CAI*, 0600 *FO5HL*, *JT1BV*, *T5SG*, *W6W7*, *ZL1AIZ*, *7J1ADX*, *8J8XPO*, 0700 *BY4SZ*, *EK0AL*, *JA* (all day), *ZK1DD*, 0800 *Y11BGD*, 0900 *BY1OH*, *BY5RA*, *FK8FI*, *H44X*, *JD1BAE* (Ogasawara), *KL7LF*, *ZK3RVC*, *3D2MP*, 1000 *VS6VC*, *ZK1CG*, 1100 *BY5OA*, *H44GP*, *JA3RL*, *KD7P/NH2*, *VO7AW*, *3B9FR*, *3C1JPF*, 1200 *BY9GA*, *OX/N6RUY*, *T30BC*, *YK1AO*, 1300 *EP9C/D05*, *TK/HB9TL*, *TZ6MG*, 1400 *VQ9ES*, 1500 *BV2A*, *HL0K*, *KL7HIF*, *P40GO*, *3C1PF*, *3B9FF*, *9K2KW*, 1600 *BV2FA*, *D68MG*, *T5GG*, *G3ZMP/5N6*, *9N1RN*, 1700 *DX9HT*, *KH6CF*, *V85GA*, *VR6TC*, *9N1MC*, 1800 *A92BE*, *SUIER*, *VS6UZ*, *YQ0A*, *9M6HIF*, *9Q5DX*, 1900 *A4XFK*, *CE01CA*, *KH6IJ*, *PY0FF*, *T5GG*, *VP8BTA*, 2000 *FG5BP*, *KH3*, *WY5L*, 2100 *HD8DZ*, *KL7ZD*, *XF3/XE11UO*, *ZL4GO*, 2200 *FJ5BL*, *VK*, *ZL4BO*, 2300 *JH1W/X*, *VK*, *W6*, *ZL1HY*, *5K3B*.

24MHz: 1200 *DL*, 1300 *DL*, *11B*, *W1*, *W5*, *YU*, 1800 *W1*, *W3*, 2000 *K6STI*, *PP5SG*, 2100 *KP2J*, 28MHz: 1000 *AX6RO*, *OHO/DL6NBC*, *NH6HF*, *NH6JC*, 1200 *FT5ZB*, 1300 *FR5EL*, 1400 *S79MX*, 1500 *KH6HSS/5N9*, 1600 *D68MG*, *J52US*, *YC0SQT*, *7X2ARA*, 1700 *TJ1DL*, *9L1GG*, 1800 *HK0HEU*, *TA3F*, *TN4NW*, 1900 *P40GO*, *ZD8MB*, *SZ4RT*, 2000 *CEs 6EJZ*, *11ICD*, *HD8DZ*, *TR8SA*, *V31AE*, *V4K1*, 2100 *FM5DN*, *J87CD*, *PJ0M*, *TE8T*, *W1-W5*, *W8-W9*, 2200 *HH2V*, *KP2J*, *YS1MAE*.

Thanks to the following for news items: *DXpress* (PA3CXC), *CQ Magazine* (W1WY), *DNL* (DL3RK), *Long Island DX Bulletin* (W21YX), *DX News Sheet* (G4DYO), *The Ex-G Radio Club Bulletin* (G13OEN/W6), *DX Report* (VK9NS), *Long Skip* (VE3IPR), and *Lyns DX Group Bulletin* (EA2JGO).

All items for the December issue should reach me no later than 3 October please.

QTH CORNER

BY4WNG	P.O. Box 1927, Nanjing, P.R. China.
BY7HY	P.O. Box 14, Yueyang, P.R. China.
C43T	YU1RL, Sime Milosevic 16, 11000 Belgrade, Yugoslavia.
DL7FT	(new) Box 1421, D-1000 Berlin 17, FR Germany.
F0SHL	WB6GFJ, Ross Forbes, PO Box 1, Los Alamos, Cal, 94023-0001, USA.
FR4FA/J	F6FNU, Res du Val, Ollainville, F-91290 Arpajon, France.
FR5ES/T	F6FNU – see above.
FT5ZB	via F6ESH, J. Cathelin, Gendarmerie Nationale, Rue de la Gare, F-59710 Pont-a-Marcq, France.
HD8DZ	via HC2DZ, Box 777, Guayaquil, Ecuador.
S79MX	K. Bindschelder, Strahleggweg 28, CH-8400 Winterthur, Suisse.
VK9YG	S. Telenius-Lowe, "Penworth", Tokers Green Lane, Tokers Green, Reading, RG4 9EB.
VP8BRT	BAS, Signy Is, Falkland Is.
VS6UO	G3IFB, "Coppalee", North Rd, The Reddings, Cheltenham, GL51 6RE.
YY5M	RCV, PO Box 2285, Caracas 1010-A, Venezuela.
3A/PA3EBV	G0DKN, Chapel Cottage, Chapel Lane, Redlynch, Salisbury, SP5 2HN.
3C1PF	ON7GV, Clos Bouchebelle 15, B-7700 Mouscron, HT, Belgium.
5N0ELT	G4OHX, 15 Shuttle Close, Sidcup, Kent, DA15 8EP.

KEN WILLIS G8VR

"Smithy", G8KG, "writing mainly for newcomers moving down to 50MHz from the higher VHF bands", says that official forecasts now seem to be agreed that mean sunspot numbers will probably be in the region 100 to 200 in the last quarter of this year, rising towards a high peak about 12 months later. This figure falls quite a lot short of the average of 185 for the last quarter of 1979, during which period N. American stations were copied in the UK on 49 consecutive days. This, however, was at the peak of that cycle, so what are the prospects for the coming winter?

For the UK, 50MHz F2 propagation should be best from mid-October to February, the highest muf's occurring between mid-October and the end of the year. Outside these months, F2 openings should be mostly confined to southerly paths and require help from sporadic E at the northern end of the path.

When conditions are right, paths which lie more or less in an East-West direction are likely to be open between 0800-0900 local time at the western end, ie 120-1400gmt for the east-coast USA, though sometimes a second phase opening will occur later. Openings may last from a few minutes to many hours. When from the east, they are typically characterised by strong signals from Russian tv on 49.75MHz; not those which are noted when sporadic E is present, but from stations much further to the east. Paths to N. Africa may open during daylight hours, but those in S. Africa tend to cluster in periods around 1200-1300 and 1600-1700gmt. Paths which are least likely are those with a strong northerly slant, eg to JA and KH6.

The daily sunspot number and the solar flux

figure (see VHF News & Views June 1988) are only a guide to F2 conditions. During the last cycle, there was good 50MHz propagation in February 1979 and during the following three winters. In all cases the monthly mean flux was close to or above 200, while the highest daily value (in a 27 day period) reached 374 in the peak month. This is not the same as saying that good propagation only occurred when the flux was above 200, but when it was observed at lower values, this followed a recent high peak. Smithy points out that since the flux reached 193 in July this year, there may well be months with peaks above 200 this winter. The geomagnetic field is also important, for good F2 propagation requires a low A-index, certainly below 15. A period of several days with "A" values in single figures and solar flux above two should merit a careful watch for F2 dx. Smithy mentions that WWV broadcasts these figures at 18 minutes past each hour, but conditions are not good for reception of WWV at the time of writing. An alternative source is Radio Australia at 0825 gmt (9655kHz) and 1625 gmt (7205kHz) - usually strong signals here in the UK. Smithy says that as a last resort, a phone call to Boulder Labs, Colorado "costing about 50p" will give access to a recorded announcement. The number is 0101 303 497 3235.

AURORA

Ron Livesey, Director of the Auroral Group of the BAA, sent his Newsletter covering the period January-June 1988. His group carries out visual observation of auroras and is therefore very dependent on weather conditions. Many visual auroras produce no radio effects, while

conversely, radio amateurs enjoy many auroras which go unnoticed by the astronomers.

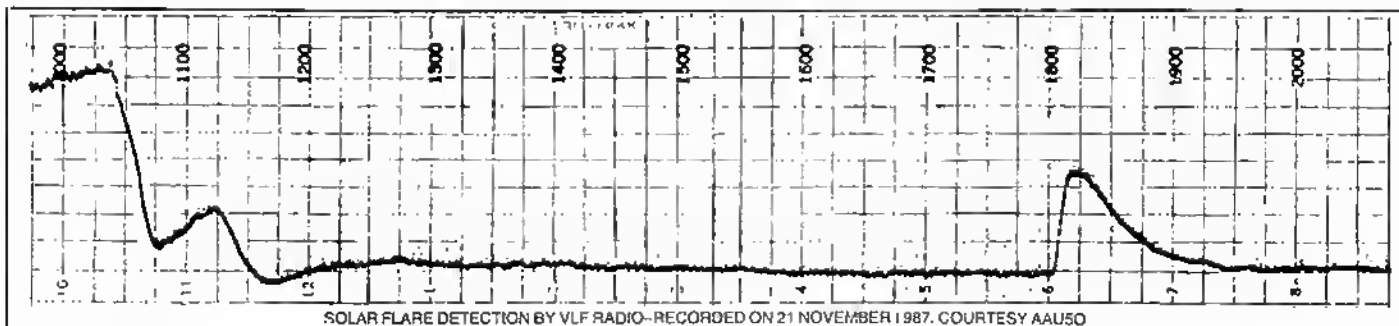
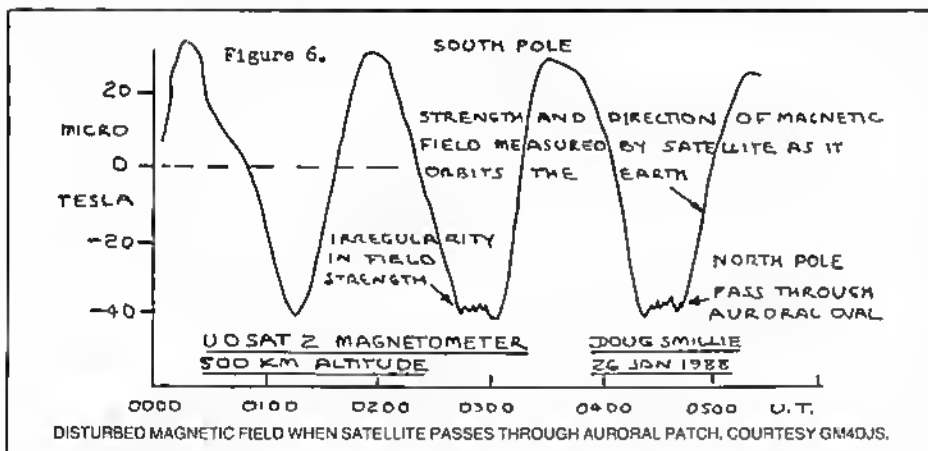
Ron says that after the upsurge in auroral activity during the second half of 1987, the first half of 1988 was relatively quiet. Auroras arise from solar events with such picturesque names as coronal holes, disappearing filaments and flares. Some of these solar events result in streams of high energy particles being ejected by the sun which take up to 48 hours to arrive at the earth's surface. One effect of these particles is to disturb the earth's magnetic field, hence the recent interest by amateurs in DIY magnetometry.

Astronomers classify solar events by the effects they produce. The most intense are known as 'storms'. Other terms used are 'sub-storm', 'unsettled' and 'quiet', all defining the level of activity of the sun. Ron Livesey says that flares account for relatively few of the observed storm conditions, but they can occur at any time during the sunspot cycle. Coronal holes, however, tend to peak after sunspot maximum, when continual streams of high speed particles which rotate with the sun (27 day period) bombard the earth and cause recurrent storm conditions. The most common cause of auroras are solar winds and variations in the sun's own magnetic field, these being at sub-storm level.

In 1984, 50 storm events were recorded, only two being due to flares, and no less than 35 from coronal holes. There were 29 storm events in 1985, 17 in 1986 and 19 in 1987. I suspect, however, that there is a tendency by radio amateurs to term any sudden solar disturbance a 'flare'.

There was a widespread radio aurora on 4 April, when Ron's records show "severe magnetic storm from coronal hole and disappearing filament". Conditions remained unsettled until 10 April, and again on 22-3 April, but these did not apparently produce radio auroras. Another intense radio aurora occurred on 6 May when the records show "storm levels for most of the day until 2115 gmt". However they also show storm levels for 9, 18, 19, 24, 25 and 26 June, with apparently no major radio auroras being observed. Thus not every storm condition results in a radio aurora, though no doubt those living in the north will frequently detect activity at such times.

It is, of course, beyond the amateur's scope to say whether an event is a disappearing filament or a coronal hole, but Martin Mann, G4FFO, of Cambridge drew my attention to a method for detecting solar flares. This technique is practiced by members of the Solar Division of the American Association of Variable Star Observers (AAVSO), PO Box 8115, Gainesville, Florida, 32605. It gives about 30 hours warning of a



possible aurora arising from a flare, Martin has used a technique which involves tuning a narrow-band vlf receiver to 17.8kHz to monitor the strength of radio station NAA at Cutler, Maine. Recording the output on a chart-recorder, a flare is shown by a sudden change in the night-time signal as illustrated in the graph. A return to the normal signal level usually takes about one hour. Martin says that flares have also been detected by monitoring OMA (Czechoslovakia) on 50kHz and Annapolis (Maryland) on 21.4kHz. Not many of us have chart recorders, but a home computer can be used by feeding from the S-meter of the receiver to an A/D converter, sampling the signal at, say, five minute intervals (see *VHF/UHF News & Views* for September 1983, G3NOX). I hope to have further details and information on vlf receiver kits shortly. These receivers can also be used for fax purposes. Another solution is to build a converter for use with a conventional hf band receiver. A circuit for one appears in the Remote Imaging Group Newsletter No. 12.

St. Kilda Expedition

Expeditions to activate rare squares become ever more complex, it seems, a far cry from the days when a hand-held in the back of a Mini sufficed to create a pile-up. Operation last October from a North Sea ferry to activate 'wet' squares was followed in June this year by the highly successful ZB2IQ expedition, but the expedition to St. Kilda by the Five Bells Contest Group in August surely sets new standards. Five Bells is not a large group, but simply a few friends with similar interests - on this occasion G4ODA, G4NPH, G8IJC and G4DHF. When they decided to go to St. Kilda, they faced many problems. This remote island in the north Atlantic is administered by the Scottish National Trust who are very protective, it being a site of natural beauty and a bird sanctuary. It is also no secret that there is a military presence on the island, these things all combining to make access and entry difficult. Only 12 persons at any one time may visit the island for non-official purposes, so it required much research and correspondence before Five Bells obtained approval for their visit.

The team arrived in Oban on a Friday afternoon having booked places on the 25ft fishing boat which provides the only means for visitors to reach St. Kilda. Here they were joined by eight shipmates, not associated with the expedition, plus the skipper who raised at least one eyebrow on seeing the amount of equipment brought by the team. This included 3kVa and 1kVa generators, large gas bottles to fuel them, rigs, antennas, tents, food and clothing, every single thing, in fact, required for their stay. Everyone lent a hand in hauling the gear, the generators and gas bottles being strapped to the side of the boat exposed to the sea and weather. Nearly 29 hours later after suffering a battering from rough seas, far out of sight of land, the party were relieved at "the breath-taking sight of St. Kilda rising out of the sea" as Dave, G4DHF described it.

They put into a small bay by the village and had to leave to off shore. The military gentleman who met the boat appeared to suffer deep shock at the sight of the load carried. Eventually everyone chipped in to unload into inflatable

March 1988 and is a design by Adrian Nash, G4ZHZ covering a 0-1000kHz. If there is sufficient interest in this I will put together a package for photocopying and offer it in the usual way.

Doug Smillie, GM4DGS, who is hooked on home-brew magnetometry, monitors the magnetometer readings transmitted by Uosat 2. A typical plot is illustrated, this being a record taken on 26/27 January when there was auroral activity. Disturbances in the magnetometer readings occur each time the satellite passes through the auroral region.

Let's hope that soon we can pause from philosophising over auroras and have a few lig ones to work some dx.

VHF Awards Manager

It has been known for some time that after serving us so well for many years, Jack Hum, G5UM, feels that the time has come for him to relinquish his position as VHF Awards Manager. To that end the VHF Committee has been considering a successor, and now Council has

rubber boats which ferried the gear ashore, a dozen or more trips being required. The team set up their tents at a camp site provided on the island. Following inspection of the high points they decided to site the station in a quarry "half-way down the mountain", some 400ft asl, which gave some shelter from the weather but was a 25 minute walk from the camp. A construction company working in the quarry generously cleared out a large trailer for use as a shack, even opening up holes in the walls for coaxial cables.

After draining sea water from the generators, a start was made on 432MHz. This proved disastrous, for when they transmitted, every tv set on the island went blank - even when power was reduced to a few watts. It transpired that tv was distributed via a relay station on top of the mountain, the relay frequency being 435MHz! The military were most helpful, and a frequency 'window' was found which allowed operation on at least part of the band without tv.

The 4 x 9 element yagis on 144MHz and 4 x 18 elements on 432MHz were fed from 3CX800 amplifiers. For 50MHz a 4 element was used, with dipoles for the 3.5MHz and 14MHz vhf nets.

Almost 500 contacts were made on 144MHz, some of them duplicates. Every time they used the vhf nets they were deluged with requests for skeds. Some 60 meteor scatter skeds were arranged, among them some with regulars like I2FAK, I1KTC, YU2CCB and OK2KZR.

Despite its problems, about a dozen contacts were made on 432MHz, while on 50MHz a couple of sporadic E openings gave large numbers of UK stations the chance, unlikely to be repeated, of working this very rare one. The weather during their stay was generally poor, with winds, rain and overcast except for two days, apparently the norm for St. Kilda. Five Bells financed this operation entirely on their own with no sponsorship or other kind of assistance. The cruel thing is that those who provide such dx don't get a chance to work it themselves. All those who can now add 'VR' square to their list will surely want to thank Five Bells for this unusual expedition.

been asked to approve the appointment of G4OUT. I hope that next month I will be able to announce that this appointment has been confirmed, and at the same time to pen a few lines in appreciation of the fine work which G5UM has done over the years, not only in handling vhf awards, but also as a past member of Council and the VHF Committee. Let's hope that Jack will soon have more time to go on the air.

Contrary to what many seem to think, the RSGB's awards, hf, vhf and trophies managers etc are all honorary posts which carry no salary or financial rewards. All are very time-consuming jobs, and we are fortunate to have people prepared to give their time and abilities for the benefit of so many.

MIDLAND VHF CONVENTION

The Midlands VHF Convention is scheduled for Sunday 9 October at Madeley Court Centre, Telford, Shropshire. This location is about three miles from the M54. Proceedings, which are due to start at 1100 hours, include a lecture programme, a small trade show, computer demonstrations, morse test facilities (look through usual channels) and possibly the attendance of the new VHF Awards Manager. The provisional lecture programme includes one by G4VXE on the recent ZB2IQ expedition, a review of 23cm techniques by G6FK and a description by G3RUH of a 9600 baud modem for data communications.

There will be the usual evening buffet costing between £5 and £6. Anyone planning to stay for the buffet should endeavour to let G3UBX (QTHR) know in advance.

70MHz

Though by no means a crowded band, 'four' has its devotees as evidenced by the success of the QSB newsletter mentioned last month. G4JCC was in the south of France in July with some 70MHz receiving equipment, and from square JN33HF, copied legends GB3BUX, GB3ANG, GB3CTC and EI4RF. He was using an ICOM 70000 with preamplifier and a vertical whip antenna only 2m from the ground. UK stations heard were G3COJ, G4ZTU, G3APY, G4GTB, G3EDD and G4SZU (this station using only 1.8watts). The suggestion from G5UM that G3RPP's contact with ZB2IQ represented a 'first' on 70MHz (see *VHF/UHF News & Views* for August) brought a swift telephone call from G4JCC who said that G3YHU had probably anticipated this by at least 10 years. I should have known better, too, because ZB2BL was very active on 70MHz in the late 1970s and early 1980s, and the path to the Channel Islands should lie a goal one. G4JCC wondered, in fact, if the first might not have been David, G3OUF, who at one time was qrv from the islands.

QSB, the 70MHz newsletter, lists a number of European stations equipped for 70MHz crossland contacts, among them CT1WW, DK1PZ, HB9CRO, I5CTE, OH2TI, OH2KT and SM6PU. The same publication mentions fm activity on this band from nets in Chester (70-425), Birmingham (70-260), Manchester (70-450), Mid-Cheshire (70-350), West Scotland (70-260) and Dudley (70-260). Individual stations using fm on the band are GW0GHF, G4SDZ and G8SYE. The editor of QSB wants information on modifications to pmr equipment

for operation on 70MHz. If you can help, please write to G4WND, QTHR.

432MHz

Some who regularly use this band feel that it is declining, and there is little doubt that activity is very low much of the time. It may not be comparing like with like, but in the RSGB 430MHz to 24GHz Contest last May, the winner of the 430MHz single operator section, G6DER, achieved this by making only 277 contacts for a score of 205. Last year in the IARU Region 1 VHF/UHF/SHF Contest the winner F6CTT scored 97,439. G6DER knows his stuff, so if he could only muster such a small number of contacts, activity must have been at a very low ebb.

Syledis is one possible reason for the apparent unpopularity of the band. Living on the east coast as I do, 432MHz operation can be unpleasant, looking for slots between the pulses, making it difficult to justify the investment in equipment, plus the shelf space it occupies. In the longer term this might resolve itself, because Syledis is said to be causing interference to other essential services, and a change of frequency band for this system is a possibility, but don't count on it happening soon.

G3UBX reported that henceon GB3MLY reappeared on the band (432.91MHz) in August with a "rather wobbly keyer" and at a somewhat low level, so at his QTH (Wolverhampton) it was barely stronger than GB3ANG.

144MHz

The poor summer brought few good tropo openings so we must hope for some of the good conditions which often came late in the year. The GB4VR expedition, reported elsewhere, created some excitement during August, though conditions were not very favourable. This is being written in mid-August, and unfortunately the deadline date falls on the very day of the expected peak of the Perseids, so no reports on the shower are available. Listening overnight, however, I felt that activity was lower than last year, and reflections fewer, but when I make a comment like that, someone tells me that they made a bumper crop of contacts. Let's hope that enough reports come in for a proper assessment to be made. It would also be useful if operators would send a list of the sporadic E openings which they caught during the summer since publication of these dates gives some indication of the 'best' times to stay home from work if you accept such statistical evidence.

A contact made by Brian, G14KIS (IO64VR) with EA8BEX (IL27GX) on 15 July on 244MHz received some publicity at the time, but Brian is anxious to know whether it represents a IARU Region 1 144MHz tropo dx record. He makes it 3065km, and he also worked EA8BML in the same square. Several other EIs worked the EA8s, but Brian believes that he is further away from Tenerife than his neighbours. G4UXC says the contact was apparently extended tropo over the sea path. Between 4 June and 10 July, Brian worked 14 Spanish, eight Italian, 14 Yugoslav and the odd HG as a precursor to the EA8 contacts a few days later.

STOP PRESS

UK stations work ZS3, ZS6 and LU 2-way on 50MHz. Records broken. More next month.

FROM HERE

Graham Rogers, VK6RO, (Western Australia) has been granted an experimental licence by the Department of Communications to transmit on the spot frequencies 35-810 and 41-750MHz for the purpose of propagation checks, particularly to ascertain the muf between 30 and 50MHz during the coming peak of Cycle 22. Fm will be transmitted, probably using a six element log-periodic yagi covering 30 to 54MHz, with an eirp of about 83watts. Proposed callsign is VK6R. Graham will look on 28885 and 28385kHz for stations to stand by for his spot frequency transmissions. He is currently looking for a suitable transmitter.

Hal Lund, ZS6WB telephoned me from London during a short visit to the UK in August. He said that beacon ZS6LW (50-024, Pretoria) had been off the air awaiting some valve replacements. It is an Ameco TX62 transmitter, and valves having now been obtained, it should probably be QRV by the time this appears. The ZS's envied our USA openings on 50MHz, though they had been very successful in working 9H1. In all, six 9H1's were reported to have been worked by ZS stations, and a ZS3 worked CT2. I asked whether any auroral activity was ever noted in South Africa, and ZS6WB said that they were "too far north for it". Other ZS beacons are ZS1STB (50-010 Stilbaai), ZS2SIX (50-005, Port Elizabeth) and ZS4SA (50-074, Deneysville). Attempts were being made to get ZS3E to reactivate his beacon on 50MHz.

When Keith, G6DER, sent me a listing of stations he had worked in connection with a VUCC award, I noted that it was computer generated, showing squares worked and whether confirmed, plus a map shading in the squares contacted. From the width of the printer paper I guessed it was produced by a Spectrum, and Keith confirmed this, saying that the program was called 'SQUF', by G4HLX. Keith keeps his records for all the bands he uses on a Microdrive cartridge. Another program called 'SPOT' is for contest score and distance calculations, and this again draws a map and gives QTF information. Contact G4HLX for further information.

Andrew, G0HEE (Sheffield) is a QRP enthusiast who has worked 73 squares on 144MHz since being licensed some two-and-a-half years ago. Using no more than 2.5watts to a double quad antenna, his dx includes contacts with OK, SP and I, most operation being cw. He describes the low end of 144MHz as "a haven for QRP operators, free from the splatter of the QRO

merchants", and deplores the attitudes typified by newcomers apologising for having "only 2watts at present, but I'm going to get a big linear for the next rally".

Andrew seeks information on clubs devoted to cw, especially high-speed.

A few years ago when I was running a 4CX250 into a 16 element Tonna I had a meteor scatter sked in the Perseids with UA3LBO for a much-wanted square and country. During the first of my transmitting periods came the dreaded knock on the door. The tv set across the street was said to be bouncing up and down at 1500rpm. In desperation I took out the amplifier and resorted to about 20watts from the barefoot rig. We completed, I got a 37 report, and UA3LBO never knew that I had reduced power.

My request for someone to transfer an IBM program to BBC format disc met with a swift response and the first to contact me was Andrew Emmerson, G8PTH (Northampton). Andrew has the capability of transferring files between most well-known disc formats. Contact him QTHR for further information. Meanwhile I will await the W1JR meteor scatter program which Andrew is transferring for me and see if it is of general interest to readers.

Ted, G4UPS, drew attention to the fact that when USA stations move to another call area, they can retain their callsign. This has caused confusion in the 50MHz openings to the USA, with some operators hearing W5 and W7 and assuming that these stations were in their 'own' call areas. Ted listed a N6 and three W7s, all in Georgia, a K6 and a KL7 in Virginia, some W5s in Florida and several W8s in eastern seaboard states. The moral is, be sure to get the locator, I admit to having been a bit anti when 'Maidenhead' was introduced, but it has certainly proved its worth since 50MHz was opened to UK operators. G4IJE remarked, however, that many Europeans on the 14MHz vhf net still use the old system.

You will have heard about mixed metaphors, but how about this - heard on 144MHz - for mixed-up modes? Quoth he, "I'm looking forward to that Perseids thing because if the pressure's high, we might get some sporadic E". What? No aurora?

G3WKM heard two lads talking on repeater GB3CF.

First Lad: "Are you using an electret mike?"

Second Lad: "No, it's a Yaesu"

AND THERE

FINAL FINAL

My apologies for having no space this month for Repeater News and further 50MHz and other information. Thanks to Leicester RG and Aylesbury Vale RG for interesting newsletters received. Thanks to G1DYN, G4JCC, G4UPS, PA3BJN, W4WD, G3JVL, VE7HBL, G1UOR, G4VXE, GJ4ICD, OH1ZAA, G3CCH, G1CWP and G4KUR for correspondence and

information, much of which will be used in a future issue.

Errata: I got carried away reporting the ZB2IQ expedition. They worked LA1K and LA8AW, NOT OA1K and OA8AW, though they were hearing LU at the time. Bad phone line was the cause. Still, you know what the song says, "Wishing will make it true!"

MIKE DIXON G3PFR

Whither on 10GHz? (Part 2 – Improving Gunn-based equipment)

What is typical beginner's gear? The story probably reads something like this: 18" dish, Penny feed, Solfan in-line Gunn oscillator/mixer, 10-7MHz i.f. fitted with a 200 to 250kHz-wide ceramic filter and a 7805 regulator/modulator. Pretty 'bog-standard' stuff so far – so what is wrong with it?

Well, the usual basic Gunn system will generally weigh in, when measured on professional test gear (at Round Tables) with an open-ended waveguide sensitivity of somewhere around -95 to -105dBm. Quite adequate for working line-of-sight paths (even long ones), but inadequate for long line-of-sight paths under subnormal propagation conditions, or marginal or obstructed shorter paths. So what determines the measured sensitivity and what can be done to improve it?

In a Gunn-based rig, performance is dependent on several factors, many of which are related to the way in which the Gunn oscillator itself is designed, set up and used. In-line oscillator/mixers are an easy and convenient compromise and they make good receivers when set up correctly. Unfortunately, when adjusted for optimum mixer current (typically 0.25 to 1mA), this means that only one to two milliwatts is available as the transmit output. A separate Gunn transmitter at 20mW output is 10 to 13dB hotter than the in-line device and it also means that you do not have to retune between transmit and receive, although you will have to acquire or devise some form of T/R switch and provide two Gunn supplies.

In my experience, the widely used Solfan in-line module usually suffers from far too much mixer drive – anywhere in the range two to five or more milliamps. This degrades receiver performance but improves transmit performance! Adjusting the mixer current down to the more usual range by means of the screw immediately outside the oscillator cavity (just in front of the iris) is usually worth at least 3dB on receive. Often the mixer diode may be 'under par', possibly due to static damage during handling. So consider replacing the mixer device with a known good one before trying to optimise – this could also be worth a few extra receive dB.

Next let's consider some of the other usually non-optimised features of the basic system. Starting at the antenna and working backwards the most important of these, not necessarily in the most logical order, are:

- Maximise antenna gain by using the largest practicable dish, remembering that large dishes are unmanageable for portable use – too large and heavy to carry and too narrow a beam-width to point and maintain accurately. 39" (1m) is probably about maximum.
- Check your dish profile to make sure it is really a parabola; some readily available dishes are spherical rather than paraboloidal and thus suffer from significant loss of gain by having an indefinite focal point.
- Choose the TYPE of feed according to the f/D ratio of the dish. Proper dish illumination can be worth several dB. See the VHF Manual for details of what feed is suitable for what type of

IAN WADE G3NRW

THE NEW LICENCE

The new licence regulations, published in August's RadCom and due to come into effect in January, represent a great step forward for those of us involved in digital data communications. Several of the old grey areas have now been clarified, and many of today's practices have been formalised in a proper legal framework.

With any legal document, however, there arise possible differences in interpretation. Mike Dennison G3XDV (chairman of the RSGB Packet Working Group), was very much involved in discussions with the DTI on the new licence, and says: "As with the existing licence, the first rule of interpretation is to apply common sense. In such a complex document which covers such a technical subject it is quite impossible to cater for every single case. The DTI mentioned common sense a lot in our discussions, and they found it hard to believe that there were amateurs who would interpret something absolutely literally even if doing so would be silly." There have certainly been some

silly messages doing the rounds on the packet network, and so in an attempt to allay the fears and to clarify the spirit of the new licence, here is my interpretation of some of the more controversial topics (extracts from the licence are in inverted commas).

Mailbox operation: The new licence specifically forbids the operation of a "... mailbox or bulletin board which receives and stores messages for or on behalf of other licensed amateurs for retransmission at a later time on the request of (and to) the intended recipient of the message. ...". If you want to operate such a box, you will have to apply to RSGB for a Notice of Variation, and assuming that your application is successful, you will then be issued with a GB7 callsign for the box. However, there is no restriction in the new licence on setting up a mailbox for your own use. You may, for example, set up an unattended mailbox on 2m, so that other stations can leave messages for you to read at your leisure, but the box must not be used to save messages for other people.

Message forwarding: Several people have pointed out that the new licence appears to restrict unattended forwarding of mail traffic to 6m, 2m and a tiny part of 70cm (in the satellite sub-band), plus parts of the bands above 2.3GHz. While this is strictly true, remember that we are talking here of a general licence which is applicable to all radio amateurs. In other words, it specifies things which any licensed amateur is allowed to do without asking for special permission. So there is nothing to prevent you setting up a message forwarding station on any band as part of an ad-hoc network; the only constraint is that the station must be attended if it operates outside the frequency bands where unattended operation is allowed. On the other hand, the vast majority of organised network traffic will be conducted under licence issued using the DTI clearance procedure currently appropriate to repeaters, beacons and the GB packet nodes. Applications have been made from 70MHz to 2.3GHz, and in addition, all GB7 mailboxes will be permitted to operate unattended on the 1.3GHz band.

Message content: Under the terms of the licence, you are not allowed to have any "... pecuniary interest (direct or indirect) ...", nor

MAILBOX MESSAGE IDENTIFIERS

When you send a message via the mailbox network, the 'send' command should be of the form 'Sx ...', for example 'SP G3NRW @ G9XYZ'. The bulletin code 'x' is included to allow readers quickly to identify messages of a particular type. The code used in the UK packet network are as follows:

- A AMSAT or space communications
- B General bulletin (not covered by other codes)
- I TCP/IP bulletin
- P Personal message
- Q RSGB bulletin
- R RAYNET bulletin
- W Wanted bulletin (for equipment, help, information)
- X Local bulletin by the mailbox sysop

The advantage of using these codes is that traffic is reduced when reading the mailbox, in that only the messages corresponding to the particular code you have selected will be listed. For example, to find out if there are any RSGB PWG bulletins on the box, use the command 'LX'.

dish. One thing is for sure, the Penny feed, as usually constructed, is none too clever with dishes of f/D less than about 0.33 to 0.35.

- A properly adjusted (focus and match) feed can also be worth several extra dB.
- Use of an rf preamplifier (if available) will be worth many dB, depending on input and output match and the following mixer match and performance.
- An optimised mixer, using a known good device and correct mixer drive, has already been mentioned.
- Image rejection at signal frequency is worth 3dB, but is not usually practicable with an in-line device used as an unswitched transceiver.
- Install a good, low-noise i.f. head preamp as

close as possible to the mixer to minimise the mixer to receiver coupling loss.

- Cutting receiver i.f. bandwidth from 250kHz to 25kHz is worth 10dB, but needs a very stable oscillator.
- For optimum receive oscillator stability, use a front cavity iris-coupled oscillator and the highest power Gunn diode you can. The smallest iris hole needed to get the correct injection will ensure maximum stability and at the same time minimise signal loss into the oscillator. In this respect, a home-made oscillator which uses a replaceable iris plate is easier to optimise than the Solfan with its fixed-size iris.
- Effective afc can improve Gunn stability performance to the point where worthwhile



SPACE COMMUNICATIONS GURU AND MODEM DESIGNER JAMES MILLER, G3RUH, ON THE PWG STAND AT THE NEC IN JULY. JAMES IS SEEN HERE DEMONSTRATING HIS NEW 9600 BPS SPEED PACKET MODEM (THE SMALLER CIRCUIT BOARD ON THE EXTREME RIGHT OF THE PICTURE), WHICH IS NOW GENERALLY AVAILABLE. PHOTO - G3NRW.

are you permitted to send "... news or messages ..." in connection with "... any social, political, religious or commercial organisation." In other words, "FOR SALE" ads are out, irrespective of how you may try to disguise them. If money is involved in any way, either explicitly or implicitly, don't be surprised if the mailbox sysop kills your message - he doesn't want to lose his licence any more than you do. On the other hand, there is no reason why you should not send "WANTED" or "HELP" messages for information or equipment. Likewise there is no reason why you should not send messages to "ALL", to add your contribution to the latest hot topic of round-table discussion, or to announce the next meeting of your local radio club. Provided that you do not set yourself up as a news carrier in competition with the established agencies, there is little likelihood of upsetting those in authority.

Station identification: This is one aspect of the licence regulations which the DTI take particu-

larly seriously. Under the new licence, it must be possible to identify your station "... at the beginning and end of each period of communication ..." and "at the end of each interval of 15 minutes ..." and also "by telegraphy or telephony at the end of each 30 minute period ...". If you are sending rtty, AmTOR or packet, this last requirement probably means that you will have to send a cw id every 30 minutes. Fortunately the new licence does not contain any restriction on the speed of the cw, so the id can be sent at a reasonably high speed without causing any real problems on the channel (although the DTI will probably take a dim view if your computer sends it 250 wpm!). As always, a commonsense approach is expected.

THE BOTTOM LINE

Our current licence was formulated many years ago, long before computers were even thought of. The new licence is a radical change, and flings the doors wide open for almost any kind of

digital communication without restriction. We can transmit data in any code (provided it is not encrypted), at any speed, and on any band except 18 and 24MHz. We can set up unattended digipeaters, without having the responsibility of checking the content of messages passing through them, our log keeping requirements have been simplified, and we can keep the log on disk. Third party messages to other radio amateurs are legal. Anybody, licensed or not, may sit at the keyboard and type messages on your behalf.

I am not aware of any other administration in the world which offers such a liberal environment to radio amateurs, and I am sure that other countries will use the new UK licence as a model for upgrading their own licences. In 20 years from now, people will regard the new licence as restrictive and mechanistic, but in the meantime we should seize the opportunities, keep our common sense, remember our gentlemen's agreements, and enjoy our new freedom. ■

bandwidth reduction is realistic, with the advantages already outlined. 50kHz should be quite realistic, with 25kHz a distinct possibility.

- Gunn performance in terms of stability and noise can be profoundly affected by the 'quality' of the regulator/modulator circuit. Lack of screening, spurious noise and instability can all cause unwanted frequency modulation.

- Optimising the Gunn operating bias voltage to yield the lowest oscillator noise may gain several receive dB, especially when using a low-order i.f. The fm noise sidebands of a Gunn oscillator will usually extend for at least 15MHz either side of the nominal frequency. Thus the common use of a 10.7MHz i.f. may be quite detrimental to overall performance. An i.f. of

30MHz would be better in this respect.

- Also in connection with the Gunn bias, electronic tuning by voltage pushing is often taken too far, i.e. a voltage swing of several volts to maximise the tuning range without resort to mechanical (screw) tuning. Ideally, once the optimum voltage for least noise has been established, it should be preset and the fine-tuning voltage restricted to perhaps no more than $\pm 0.5V$ around this point. The Gunn will usually be least noisy when it is run at about 1 to 1.5V above the turn-on voltage. This is certainly not coincident with maximum power output and most beginners will, naturally, tend to set up their oscillators for maximum output rather than best performance. Ignore the temptation!

If wide range voltage pushing is attempted, it is a good idea to systematically check the Gunn frequency with a wavemeter while slowly increasing the Gunn bias voltage. Most Gunn diodes operated at higher voltages to obtain maximum power output and voltage pushing will tend to jump modes and frequency, or even tune backwards for a short distance. This phenomenon can explain why paths which should work sometimes don't; the Gunn may have skipped over the frequency of interest, quite unintentionally!

Once all these improvements have been considered or carried out, then you can start to think about the other alternatives! More next month. ■

RON BROADBENT G3AAJ

The most important news over the past few weeks is the multitude of reports of successful operation via our newest satellite in orbit, Oscar 13. Dozens of newcomers, and old hands have enjoyed good communication via this bird. It is gratifying to hear most of the operators talking of the Mean Anomaly – times when it is best to go on – and times when conditions are poor because the satellite is not in the right attitude in relation to the operator's ground QTH. Certainly there is an awareness that you have to use your brains to get a contact. This must be a good thing because it brings some newcomers into the experimental area of our hobby.

For those readers who are not members of AMSAT, and therefore don't get the latest news about satellites, let me outline what's been going on during the past few weeks. Prior to the launch of Oscar 13, and well after that date, the team of Phase 3 builders from AMSAT DL, AMSAT NA and AMSAT UK (yes, one or two members of AMSAT UK have played their part) were honing the parameters of the satellite to ensure that the best possible orbit was attained during the various burn periods. They have monitored the on-board computer systems to check whether the satellite is operating correctly, and that various modes of operation are capable of sustained reliability.

It is estimated that at least a dozen people who have the Command Station capability each give about 2000 hours a year of their spare time to bring this satellite into full operation, and keep it that way for all radio amateurs to use. No piece of ironmongery in the sky flies on its own accord, and gives the service required without some effort from a few dedicated people.

I have been saddened by the few who have abused the satellite with high power input at 144-450MHz to the 70cm return path. It is expected that in the UK and Europe we use the Space section of 2m at the top end (145-9MHz). Mind you, having made that statement I fear that perhaps AMSAT groups and national radio societies are in some way to blame for the situation as it has arisen: AMSAT for not giving maximum publicity two years ago when the proposed frequencies were published, and national societies, our own included, for not bringing the matter to a head at IARU level. It must have been known that the use of these frequencies was a hot potato in some of the congested areas of the world. I believe that there is still a tendency for national radio societies to look down their noses at AMSAT, and space matters generally, as not really being part of real amateur radio. That not one word was spoken about the OSCAR 13 Band Plans at the recent Region 1 IARU Conference is, to me, evidence of this.

Perhaps now that a resolution, passed at the July 1988, RSGB International Satellite Symposium to ask AMSAT UK to effect liaison between all AMSAT Groups for proposed band usage we may see a change before the Phase 4 and the UOSAT-Delta fly. To remind those AMSAT and IARU officials who agreed to this at Gadalming, the date set is October 1988! This scribe will do his part if input is forthcoming. Having said that, it should be reported to those

who did not read the small print that some IARU Regions and national band plans have the section 144.350-144.500MHz reserved as SPACE uplink as well as the 145.8-146.0 section. This in itself is a good enough reason for AMSAT Groups and IARU to get together on this subject. Some of us in AMSAT hope that the Gadalming meeting will bring both sides together on many such issues. There certainly appeared to be a willingness to do so on 28 July 1988 when we closed the doors on that meeting.

THE PAST MONTH

It can now be told that AMSAT UK and the University of Surrey are jointly designing, building and launching their own Transponder in early 1989. The transponder will be a Mode J device (two up – seventy down) and a Packet Store and Forward unit with similar capabilities to the JAS I satellite now in orbit, but hopefully communications and output power will be multiplied by the power of ten. Certainly this will be the design aim. A launch has already been secured. AMSAT UK and G3AAJ in particular are now in the "We want your money" business!

No satellite system gets launched without the crinkle stuff and ours is no exception. The cost of this package will be in the region £27,000 and any donations from any source will be gratefully received by the Hon. Secretary, AMSAT UK.

UOSAT Delta, of which the AMSAT UK Transponder will be a part, will also have on board another system built by the U. of S. for the VITA Organisation. The system to be used for helping third world countries with communications in health and disaster situations. Rest assured that no part of that system will be used on amateur frequencies. In short, we are getting a ride on a satellite costing £350,000 – £400,000, and funded jointly by VITA, University of Surrey, the Royal Aerospace Establishment and AMSAT UK.

Here's a brief definition of the UOSAT Delta payload (Primary): A Packet Communications Experiment (PCE) as an orbiting packet node with 4Mbytes of storage space and which advances the work already carried out on UOSAT 2 (OSCAR 11) in the Digital Comms Experiment.

All amateur radio stations with appropriate equipment will be able to have open access to the PCE via AX25 packet radio systems. The transponder will use 9600 bits/second, with 1sk uplinks and downlinks. These channels will be compatible with existing modems such as the G3RUH and K9NG units. RF comms links should be good enough to provide consistent service to ground stations with modest non-steerable antennas. An experimental high power downlink mode for very small ground stations will also be provided. Other systems within the spacecraft structure will investigate the space radiation environment within the spacecraft and on spacecraft components, and the development of low cost earth imaging techniques.

The spacecraft is expected to attain an orbit which is Polar and sun synchronous, and in an 800km orbit. UOSAT Delta and UOSAT Echo now take over the mission objectives of the postponed UOSAT C spacecraft.

SOFTWARE

Now the commercial. I get asked about ten times a week, "What is the best software for my computer for the satellites?" My answer always has to be another question, "What do you want the software, and your computer, to do?" because you do not need a number-cruncher to enjoy or even track and find any amateur satellite. In fact most of us old hands do not have that noisy rfi machine in operation during a pass of any satellite. Given that you only want to receive or transmit via satellites, and not just look at a pretty screen of graphics, all you need to enjoy this hobby is the ability to read a line of figures in an orbital calendar. AMSAT UK members get one free every two months plus a device called an 'oscillator', which is a Polar map and a set of satellite tracks which are moved in accordance with the aforementioned orbital calendar. This costs pennies, not pounds. You can also spend a small sum on the *Guide to OSCAR Operation*, from RSGB or AMSAT UK sales, which will answer 99% of your questions on how to get your feet wet.

Seriously, the best programme for your computer to predict the tracking of a satellite is the one that is accurate for every day you wish to use it. Therefore it must have a means by which you can easily input new (say monthly) Kepler Elements. If you can do this, then any programme is a good one for your situation, as all you need is a list of numbers.

Hopefully, without treading on anyone's toes, it is almost certain that AMSAT UK have the most up to date satellite programmes in the country for at least five of the most popular micros. We have two of the best programmers of satellite software in our midst! Therefore, if you send a case to me at the above address, I will not only send you a satellite information pack, but also a list of software.

THANKS AND NO THANKS

I have had two letters of complaint and about 40 saying 'Tux' for the Satellite column. One comment was that although the reader had no intention of using satellites as repeaters, he was interested in MMR. Therefore he saw no reason to put Keplers into Radcom as they would be out of date before printing. True – in fact as he should know they are out of date after even one orbit – but why split hairs? This may be true of the LEOs, but it is not so for the OSCAR 10/13 orbits. Those who read Oscar News will know that the Keplers used on OSCAR 10 over the last 12 months (the smonthead set by G3RUH printed in Jan 1988) are still accurate to about 2 minutes. The set printed in Oscar News for OSCAR 13 mid July are even at this date accurate to approximately a minute in a good programme. Suffice to say that although I personally have the very latest sets sent to me, daily if required, I seldom update my IBM for more than once in three months. I can find OSCAR 13, or any other satellite inside one minute of its pass time.

Another couple of comments from same source. "Give Keps more regularly in the AMSAT UK nets." You cannot win. In the main I receive remarks such that people are bored to tears with "Keps" and the weekly waffle about them. Perhaps the answer is to get

MIKE SANDERS G8LES

The IARU September International will take place from 1800gmt on 10 September to 1200gmt on 11 September. Reception reports are also welcome as they count for half points. Protocol: transmitting stations call in 144.750 or 144.170; find a contact and a clear 144MHz working frequency. A four-figure number is sent in vision which the receiving station totals. This is confirmed via 144MHz, but without reading out the actual numbers. Picture strength and locators are also exchanged; please send entries to Mike Wooding G6IQM.

THE BROADCAST BANDS

BAND 1: Poland, Czechoslovakia, PTT Nederland 1, Iceland and Norway are being seen via sporadic E on a regular basis, up to noise-free colour at times. Western European channels are 625 line PAL with 5.5MHz sound at (E2) 48.25MHz (E3) 55.25 (E4) 62.25. Eastern Europe is different with 625 line Secam and 6.5MHz sound at (R1) 49.75 (R2) 59.25 (R3) 77.25. A simple dipole, a 50MHz aerial, or an old horizontally polarised '405' line aerial will all be able to connect to a VHF tv set.

BAND 3: Here in the south activity has been restricted to the south owing to the weather high pressure centres which seem to think that the rest of the UK needs to change its decorum! Among frequencies from 175MHz to 224.25MHz (channels E5 to E12) Canal Plus is the regular which is on channel 5 (East) or channel 9 (South). Transmissions are scrambled with subsequent lines being delayed by 800, 1600 or nil nanoseconds, and the sound is a 5.5MHz subcarrier modulated with 12.8kHz single sideband! These transmissions are similar to BBC2 late night test transmissions. Receivers with Secam system 1, are required for successful results. These transmissions are a very good guide to conditions in Europe.

70 CM ATV

My most notable contact was on the morning of 6 August while monitoring the Emley Moor and Sutton Coldfield beacons. The meter suddenly changed against the end stop! I transmitted vision and was immediately called by G1JT in Coventry who saw my test card. He brought G6IQM and others to join in and so created a good two-way contact. My regular longer distance contacts are G4ZEK in Colchester and G4IMG near Tamworth. A signal strength of S9 on a communications receiver will just produce a

detectable picture on a tv set; 30dB more is required for a comfortable contact. Despite this, 144MHz can be more difficult than the tv contact, because linear amplifiers and high gain beams on 432MHz overtake the station's abilities on 144MHz. A large improvement in reception can be achieved by reducing the tv receiver i.f. bandwidth to 1MHz by a switchable i.f. amplifier/filter. This combats fm communications patterning spoiling the picture reception but will not prevent satellite up-link interference which is on the same frequency. On medium to strong pictures this filtering spoils picture resolution and prevents colour reception.

Recommended equipment: a video camera or a computer with a test card program (Spectrum or BBC), a broadband horizontally polarised aerial of maximum length your location will allow, such as the 27 element G3JVL quad loop, low loss feeder (LDF 250), a GaAs FET preamp, 'N' type relay, upconverter to channel 36, transmitter of around 10 to 20watts minimum and optionally a linear amplifier, valve or transistor, suitable for tv operation (you don't want resonant chokes at video). There are many excellent articles on home brew converters and transmitters in BATC publications, and Microwave Modules supply the ready-built item.

23 CM ATV

The Emley Moor repeater has now been licensed and will be positioned in the room at the top of the tv transmitter mast. I'm really looking forward to working it during the next lift! I have been monitoring the High Wycombe tv repeater on a chart recorder and find that over a semi-circumference path (follage) that fine rain is deadly for attenuation, larger raindrops are not too bad, windy weather moving the tree tops causes large fluctuations and that the signals always improve when, on a dry day, the temperature drops below 9 degrees centigrade. Notable contacts recently were G1JT Coventry on 6 August, up to P4, while sending my received signal back to him on 432MHz. During this contact I was called by G1XE portable near Torquay. I rotated the aerial and sent Viv a picture on 1248MHz expecting no result. To my surprise, although very variable, sound and colour were being received sometimes noise free for over three quarters of an hour, which is not bad for around 140 miles.

Recommended equipment: Either two downleads with a receive aerial for the top of the

band and a transmit one for the bottom for repeater working, or a single downlead with a broadband aerial. The Tonna 23 element 24CM aerials can be hand handled with a reduction in gain by cutting 2mm out of the centre of the driven element and altering the element spacing in 'grouped logarithmic'. I have the spacing details. G6HVO hail to remove 1mm from the driven element and trim all the directors down on the 1296MHz Tonna to stop it going downhill in the rain, for 1308MHz.

The broadband aerial which is shown to work well is the G3JVL 47 element quad loop. This is equivalent in gain to a 23 element Tonna but can only be compared at the narrow frequency range over which the Tonna is at its best. The JVL aerial has a broadband three loop long periodic driven element. The largest loop resonates around 1220, the middle one at around 1255 and the small one around 1290. While higher gains can be achieved with long yagis in split frequencies this aerial is a good compromise. Tests on a number of different aerials are taking place on a professional site organised by G3NAQ and G3SEK who we understand will be publishing their results as soon as they are written up. Feeders: LDF250 minimum for the 'standard' run of 40ft; obviously the fatter cables 450 and 550 are preferable if the purse is large enough. This may seem a bit heavy but let's just quote an example. G4PXH in Southampton transmitted 50watts of 1296MHz down a 120ft length of UR67 and 2.5watts was measured at the aerial. As the power on 1296MHz costs a lot of pounds per watt it is daft to throw it all away down the cable.

Transmitters: Wound and Douglas fm tv ulf board, 432MHz amplifiers and tripler. Alternatively there's the G8CMO tx with sound and CCIR pre-emphasis as a box and kit from the Worthing Group, or as a board and instructions with all the latest power and other mods from the Home Counties TV Group, but buy your own bits from Borex at Slough. Receiver: Aster satellite down converter (not the fm demodulator) with a GaAs fet pre-amp, the BATC fm demodulator with all G8LES mods or the G8CMQ fm demodulator with G8LES mods for colour, sound and sensitivity - available as a board and instructions from the HCA/TV Group. The Icom SC1040 (Mitsubishi M57762) is an excellent broadband 20watt p.a. when mounted on a 0-43°C per watt heatsink to take the tx to a reasonable power level.

NEXT MONTH

More information nationally, discussions in picture grading and reporting (the P meter) and repeater signal processing.

Oscar News (plug). They are always printed in the magazine. I am also brought to task about giving out Two Line Element sets, and "These do not include the Arg. of Perigee." Sorry, but the two-liners do include the Arg. of Perigee, and I do not only give out Two Line sets. There is also a suggestion that someone write an article about Modifying element sets to correct AOS and visual sightings in order to improve accuracy of computer programs. Our computer programs are accurate according to my rx and tx equipment - ie, I do hear the satellites when they are supposed to be where they are in the orbit!

THE KEPS

Having said that, here is the latest set of Keps for Oscar 13 as I push this up into the modem on it's way to the Ed. Unless Karl, DJ4ZC and his helpers at Marburg and Cambridge change the orbit on Sept 21, this will be as accurate as most of you will require to actually use the satellite, not just check to see if your computer is as accurate as the one on board the satellite itself. Incidentally, those who have not already found out, Oscar 13 is giving information about itself on every pass via the 400 psk tlm and an AMSAT UK modem attached to your friendly

micro; by rty and also cw. Have a listen on 145.812MHz on the hour and half hour for cw, and quarter past and quarter to the hour for rty. Rest of time psk via modem.

OSCAR 13: EP 88.237, Inc 57.5750, RAAN 242.19140, Ecc 0.655817, Arg 180.38650, MA 161.6930, MM 2.09697, Drag 8.1+, Rev 149.

Thanks to Max White RGO.

LATE NEWS

MODE S successfully switched to operation, weekend of 9 September. Mode S beacon frequency measured 2400.66MHz. AMSAT-DL.

GEORGE DOBBS G3RJV

We all know the classic definitions: one volt times one ampere or one ampere squared times one ohm. The problem comes when trying to explain low power radio operation to non-amateur radio friends. Even suggesting the power level of, say, a local broadcast station and then explaining the use of 2 or 3 watts for transcontinental radio communication can leave them baffled.

C. F. Roakey, W9SCH, in the American QRP Quarterly, suggests a few commonplace examples which might help. We may explain that broadcast radio stations supply around 500 to 50,000 watts to the antenna to cover 50 to 500 miles and that in amateur radio a 1000 miles per watt is an easily achievable target, but this may not be readily digestible information.

Some everyday comparisons might go like this: A tiny Christmas tree light bulb consumes about 0.1 of a watt. A single cell pencil type torch consumes about 1 watt and a common two cell torch around 2.5 watts. The tail light on your car probably uses about 6 watts.

The most homely example from W9SCH involves inviting a friend to share refreshment. Take a 12 ounce can of your favourite beverage from the fridge and place it on the table in front of the subject. Open the can. Invite the participant to lift the can from the table in the month. Assuming the distance from the table to the mouth to be one foot and the time taken to lift the can about one second, then the subject has been engaged in close to one watt of output. It may not be convincing or objective but it is a good way to win friends to amateur radio!

WATT'S DISTANCE?

For many years the QRP ARCI in the USA has offered its popular 1000 miles per watt award. It is awarded to any radio amateur who can give QSL proof of a contact which achieved 1000 miles for 1 watt of rf power or computations thereof. One of the reasons I suspect that it is so popular is that it is achievable. Most amateurs with a modest antenna and low powered equipment can manage to attain the award. Most will also agree that it is easier to achieve the target with one watt covering 1000 miles rather than 5 watts working 5000 miles. This points up an interesting observation made recently by Alan Chester, G3CCB.

G3CCB calls into question using this criteria as a measure of radio performance against minimal power. He points out that decreasing the power used enhances the achievement of the award. The power required for radio propagation is not proportional to the distance but to the square of the distance - all other things being equal. The 'other things' rely upon signals in free space, but the general principle still holds.

Alan maintains that if the 'miles per watt' principle is to be taken seriously it ought to include the square root in the computation. The distance worked must be divided by the square root of the power used to give a measure of performance that will then be measured as 'miles per root watt'.

This gives an interesting set of results. Three hundred miles worked with 3 watts will produce a meagre 173 miles/watt but 1000 miles worked

with 100 milliwatts (0.1W) will give an impressive 3,200 miles/watt. Perhaps QRP operators should try the calculation with some of their log entries? For my part I am not sure if the 1000 miles per watt award was meant to be an objective statement of achievement. It has become a popular award which has encouraged some radio amateurs to use low power and win a piece of paper. It is the wise ones who have spotted that it can most easily be attained with one watt or less. I wonder? Will the QRP ARCI change the nature of the award in the light of G3CCB's observations?

A RUSSIAN QRP CLUB

Oleg Borodin, UA3GVR, has written to me with news of a Russian club for QRP operators. Although I had not heard of a Russian club specifically for QRP operation, certainly I have worked many Russian stations using genuine (5 watts or less) QRP power. The U-QRP-CLUB appears to be a recently formed group which, as yet, does not have a magazine but does seem to organise special events.

During the period from August 5 to the 20, UA3GVR and several other members of the U-QRP-Club mounted an expedition to Adjar ASSR (Obast N.014 P.100-0) using the /UF3Q. That station was a homebuilt, 12 transistor, transceiver running 5 watts of rf output.

As yet I have not received results of the expedition but Oleg does give some details of his own QRP achievements. He has worked over 60 countries DXCC in QRP and has 151 USSR Oblasts on 3.5 MHz cw. It is interesting to note that several members of the G QRP Club are oblast hunters and this is becoming a popular competitive pursuit amongst low power operators.

Oleg is to keep me informed about the development of the U-QRP-Club so further information may follow.

ECCLESIASTICAL RADIO DAY

I have never owned a tower for my antennas but I do have a church tower. It is well over 100 feet high and, to be one up on an expensive lattice

tower owners, it has a bell. Over the years I have had the usual jokes about it being ideal for antenna mounting but my house is over 100 yards away from the tower. Recently I did use the church tower for antenna mounting.

Amongst my professional problems, of late I have had to consider the restoration of our fine church organ. (For those who know about organs, it's a Father Willis, 3 manual, 44 stops and 2565 pipes; certainly not QRP!) In the attempt to realise the several thousand pounds that the work will soak up, it was suggested that I run a sponsored radio station for one day. So taking the excuse for extra operating time and the chance to use the tower, I worked as G3RJV/A from the base of the tower on Saturday 31 July.

The aim was really a gentle day of QRP operating, trying whenever possible to work other QRP stations and attract some money from sponsorship. The stations was an Argonaut 509 transceiver (2 watts output) feeding a full sized G5RV (donated by Ham Radio North West) and G4GKU Minibeam (from J&M Amateur Radio). The G5RV was centred on the tower and the G4GKU Minibeam, complete with rotator was mounted on one edge of the tower. I was operating cw all day and had the use of the superb ERA BP34 Audio Filter. I was asked if I found working amateur radio inside a church an odd experience, but I found eating the splendid plate of bacon and eggs which my wife brought me at one stage rather more novel!

Oddly enough the G5RV did not seem to work quite as well as my location at home, where it is at about 60 feet, but the G4GKU minibeam seemed to function quite well on 21 MHz. The conditions were not very good on that day but I did have 72 QSOs, of which 46 were with other QRP stations. Had I not spent time calling for other QRP stations the total number of stations worked no doubt would have been much higher.

It was fun. It attracted the local press and several members of the G QRP Club called into the station on the day. It also raised some useful money for a worthy organ; the final amount is still unknown. Should anyone reading this column feel moved to add to the total, please make out your cheques to "St. Aidan's P.C.C." and accept my sincere thanks.



G3RJV ON QRP DAY FROM ST. AIDAN'S CHURCH, ROCHE DALE. TRANSCIVER WAS AN ARGONAUT 509 (2 WATTS) WITH AN ERA BP34 CW FILTER, PLUS HOME-BUILT KEYS AND ATU S. (PHOTO ROCHE DALE OBSERVER).

BOB TREACHER BRS32525

First, let me note that the rather disjointed nature back of the August column was an editorial problem. Secondly, reference to "RSS" in the "Replying to SWL Reports" passage should, of course, have been "RS".

FIFTH HF CHALLENGE

Time once again to give my hf Challenge a mention. Each year, the number of logs received suggest it's a worthwhile innovation aimed specifically at getting listener members to take a listen to the CQWW contests, where much good DX usually crawls out of the woodwork. This year, with the increased sunspot activity, the event should be the best for many years, with some good dx logged on the higher bands.

The challenge will be held to coincide with the CQWW contests on 29/30 October for ssb and 26/27 November for cw. As usual, the idea will be to log as many countries as possible. Only one station from each DXCC country can be logged on each of the six bands. The full rules are as follows:

- (1) Entries may be single band or multi band, but not both.
- (2) Each different country heard on each band will count for points.
 - (a) Countries in the swl's own continent count 1 point on 28, 21 and 14MHz, 2 points on 7 and 3.5MHz, and 3 on 1.8MHz.
 - (b) Countries outside the swl's own continent count 3 points on 28, 21 and 14MHz, 5 points on 7 and 3.5MHz, and 10 points on 1.8MHz.
- (3) The final score should be calculated as follows:
 - (a) single band entries - the total points should be added together and multiplied by the number of DXCC countries heard.
 - (b) multi band entries - the total points from each band must be added together and multiplied by the total number of DXCC countries heard on each band.
- (4) Entries must be on standard sized log sheets and written legibly and in ink. A multiplier check list showing, alphabetically, the countries heard on each band must accompany the log.
- (5) Entries showing the full callsign of the station heard, the station being worked, the time and signal strength of the station heard (minimum allowable will be 3x3 on ssb, or 339 on cw). Logs should be sent to me at the above address, to arrive no later than 28 November (ssb), and 31 December (cw).

QSLING TECHNIQUES

Once again, two licensed amateurs have provided proof that some swl's are not following the rules for sending/obtaining cards which I find myself repeating all too often.

One, from an swl who writes to this column regularly, sent a rather flimsy photostated piece of paper to one of this country's leading DXers with a 33 report on 14MHz when the station in question was working a station in YB who exchanged 59 reports. In such circumstances, sending a report is totally worthless as both

stations know they are 'making it' to the other side of the globe. I'm also sure that if you have to qsl a 'G' on 14MHz, for whatever reason, one can be found who is a better signal than a 3x3 report would suggest.

Another amateur explained in his letter how two recent SWL reports he had received had gone unanswered because in one case no date was given, and in the other, neither a date nor any callsigns of the stations worked were given. Both are examples of swl's simply not taking enough care with the preparation of their reports. In such cases, it seems quite in order for the receiving amateur to decide against sending his qsl in return.

ILA NEWS

GW4OXB has sent us the latest edition of the ILA's quarterly newsletter. The Association, RS88763, notes a substantial increase in its membership in the first part of 1988, with a large number of new members already belonging to the Society.

The Newsletter features a list of UK Nets, which will be of interest to those who prefer to listen on the HF Bands, and an interesting schedule of commercial teletype stations which operates from 9.09 - 13.65MHz.

The ILA Net meets on Sundays at 0930 on 3.687MHz. Anyone interested in joining ILA should write for details to 1 Jersey Street, Tlafad, Swansea enclosing a large sac.

CW PARTY

G4FAL sent details of the European CW Association's Fraternising cw Party, to be held on 19/20 November.

There is an swl section which requires the exchange of both stations heard to be logged in order for points to be claimed. The event is to be held between 1500 - 1700 and 1800 - 2000 on 19 November, and 0700 - 0900 and 1000 - 1200 on 20. 3.5, 7 and 14MHz. The rules are rather complicated, so anyone interested is invited to send a sac to G4FAL, 1 Tash Place, London, N11 1PA.

50MHz

A new beacon, GJ4HXJ, is now up on the island of Jersey. The beacon came on the air on 9 May 1988 and runs 10W to a halo. It has already been heard by listeners in G, GM and

50MHz BEACONS

Frequency	Callsign	Locator
50-015	SZ2DH	KM18
50-020	GB3SIX	IO73TJ
50-030	CT0WW	IN61GE
50-032.5	ZD8VHF	II22TB
50-035	ZB2VHF	IM76HE
50-039	FY7THF	
50-045	OX3VHF	GP60
50-050	GB3NHQ	IO91VQ
50-057	TF3SIX	HP94CC
50-080	GB3RMK	IO77UO
50-085	GJ4HXJ	IN89WE
50-070	W2CAP/1	FN41
50-085	9H1SIX	JM65FV
50-499	5B4CY	KM54



MY YOUNGEST READER? THIS IS SOPHIE A FOUR-YEAR-OLD GREAT NIECE OF REG. BRS39047 SEEN HERE LISTENING ON A TRIO 1000.

GU by ground wave and meteor scatter, and had been copied in around Europe via sporadic E. It is likely that the callsign will be changed to GB3IOJ within the next year and will have an increase in power. The beacon operates on 50.065 and is an fsk type transmission. Reports will be gratefully received by GJ4ICD.

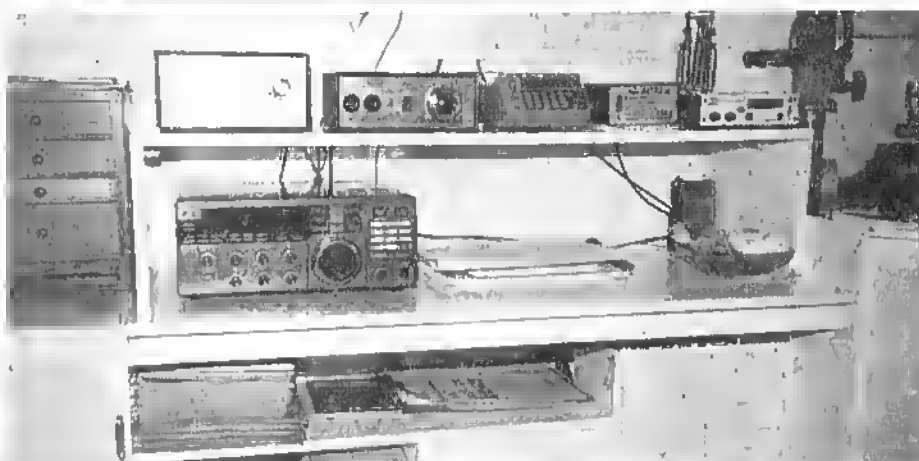
With a growing number of swl's getting interested in 50MHz, and with thanks to G4UPS, I have included here a list of all the 'most likely to be heard' beacons and their frequencies.

While on the subject of beacons, it is worth noting that the ZD8 beacon had been heard in the UK on 1, 2 and 7 August, peaking at S6 at times. The 5B4 beacon was also audible at 0840 on 20 July.

For those keen on 50MHz DXing, there is a fm net every morning on 3.718kHz at 0715z where news and information is exchanged. Listeners will do well to listen to pick up the latest information. There remains much to be learnt about propagation on the band, but it seems clear, from the qsl's which I have received, that operators are anxious to receive more listener reports, particularly from those a little further afield and, perhaps from countries with no allocation so far.

As for recent happenings on the band, July and August were, by comparison with June, rather quiet. The best day here was the 21 July when Es propagation provided 9H1EL, as early as 0755. CT1WW, CS2LN and CT4KQ/M followed around 0900. From 1035 an opening via backscatter produced good signals in JO01 from IO70, 80, 81, 82, 83 and 93. Several Frenchmen were then heard at around 1145. After a quiet afternoon the band sprung into life again at 1700 with GM1SM/P in the Orkneys. The CT beacon was 20dB over S9, and OG2C (KP20) was heard. Later that night (at 1830 - 1915) six LAs were heard. The 23rd provided some more GMs, OG2C again, plus OH5YW in KP30. LA3EDA/P (JP54) was the pick of activity on 24th, while 31st had CT4KQ/M in IN51.

Looking back, Michel Montell F1ATZ (JN13), heard the Squarebasher's trip to ZB2 for his first country on the band in 1988. Hopefully, Michel might be able to clarify the French licensing position for us in G-land. David Whitaker BRS25429 (IO93) updated his squares tally on the band at the end of June. 28 squares in 13 countries had been heard, with four countries confirmed. David was particularly pleased to log SV0FE on 3 June and SV1DO on 5 June and OH1ZAA and OH3TR/1 on 25 June.



BRS91543'S SHACK, WEM, SALOP, SPORTING AN NRD525, AOR 2002, SIGNAL R532, HOWES CDRX AND HOMEBREW ATU.

144MHz

I was holidaying in Dorset when the big Es opening of the year occurred on 10 July. It seems that the opening in 11A, I, OE, OK, YO and YU lasted for around two hours with some amateurs working dx from 1400 through to 1615. Mick Tams BRS31976 (JO01), Ing showed much good dx, including YO2IS (KN14), HG8DZ (KN06), YO5PBE/P (KN16), YU7EW (KN05), HG7WJ/5 (JN97), and HG1RC (KN08). Mick provided some useful data too. Unlike the 4 June event, there did not seem to be such a restricted area of the country working the DX at any one time. HAs and YOs were heard working GM, GW and EI, and then working a station in JD01. There was also a far wider spread of DX stations to be heard. On 4 June stations heard covered a fairly narrow strip of squares only three wide and nine deep. For this opening, the area covered was six squares wide and five deep, and it took Mick's all time squares tally on 144MHz to 204.

While I was supposed to be packing the suitcases, I caught a 25 minute Es opening in southern EA at 1640 on 8 July. Seven stations were heard in a fairly small area of 1M76, 86 and 87. There was also a brief opening in LZ at 1224 on 20 July.

All that Michel Monteil heard from central France of the 4 June Es was GM0EWX and Y24SO, but he more than made up for that on 7 June when he caught a spectacular opening in LZ, SV, YU and 9H1. At 1045 he heard SV1EN (KM18). This was followed at 1058 by the first of a string of 9H1s until 1114. 1136-1141 gave YT2GL (JN95), YO2II (KN06) and HIG8CE (KN06). At 1158 the ham opened again in SV, and then from 1218 to 1315 many LZ and YU stations were heard, including LZ1KDZ in KN32 (a grab of 1828km). Plenty of information there for those who record the strange effects of Es propagation.

As this is being written in mid-August, these were probably the last 144MHz Es openings of 1988.

On the tropo front, David Whitaker caught some local ducting across in Scandinavia on 12 June, with 432MHz providing SM4KYN (JO79).

HF NEWS

Having given the vhf hands a fair bash this month, let us now do justice in the hf spectrum.

Robert Small BRS8841, reported an excellent month. He heard the expedition to Malyj Vysotskiy Is - 4J1FS. This was the first ever joint East-West Expedition to the island, which is located near the town of Vyborg. It was apparently leased to Finland in 1962 and is separated from Finland by Soviet mainland and islands. It seems likely that DXCC status will be given. QSL via OH2NB.

Robert mentioned better conditions on 3-5MHz with some good openings to South America. 14MHz had provided good morning openings into the Pacific. 21MHz had also been good, with strong signals from JA, VU and YB. H44X and ZK3RVC were heard too. Two new stations were logged from Zaire - 9Q5MC and 9Q5SF. Another interesting station logged was KL7ISA/VE6/M, who was driving through Alberta on his way from Maryland to Alaska.

Colin Watson BRS46598 sent an interesting list of DX logged, mainly on 14MHz. Most of Colin's listening is done very early in the morning. This policy paid dividends with ZK1DD for a new one. Many JA, W, ZL and VK stations had also been heard.

Robert Walters BRS90281 provided his first report. He uses a wire antenna into an FRG7700 and FRT ATU. Most of his time had been spent on 21MHz logging stations from Africa and South America. Two S83 stations had been logged. There are only five licensed amateurs in Transkei, but the country is not recognised for DXCC purposes.

TN4NW was active at the beginning of July from the Congo Republic. Of interest was that contacts were logged by computer and the disks were sent regularly to the Manager, AL7EL to ensure speedy return of qsl cards. However, please note that the operator asked for cards to be sent direct only AL7EL, not via either the KL7 or TN bureaux. You have been warned.

28MHz had been the favourite ham of Joan Slater BRS90400 in June. She sent a computerised list of the stations heard. Included in the list was some good DX, including N7DD/VF9, ZF2KN and ZD8HF.

News from Africa sees Stan Porter ORS45992 a little nearer his return home. The DX looks different from his point of view, with 28MHz producing DX such as C53FV, FT5ZB, FY5EM, TY1MD, 3B9FR and 5H1HK. KH6JEF/KH7, WB6POF/KX6 and T30JL were the best on offer on 14MHz.

Reports from other BRS members mention AL7JG/3D2, D68MG, FO5FO, J52US, NH6J/NHO, P40PO (via N1CIX), 879DW, VP2M/G4WYG, V47NX, WY5L/KH3 and YN3ED mainly on 14 and 21MHz.

NEW BOOKS

I have the new *Interbooks* catalogue. The firm specialise in books for the swl. They have a large selection of books which cater for all listening tastes, ranging from the *World Satellite Almanac* to *Maritime Radio Handbook* and *Shortwave Directory* in 25 *Simple Indoor and Window Aerials*. All books are reasonably priced. For your free catalogue write to Interbooks at Lyn-ton, Stanley, Perth, Scotland, PH11 4QQ.

OTHER NEWS

Dean Alism wrote to say he is now G0JQR, but until he builds a dummy load capable of handling 400W pep, he intends to remain an swl.

Brian Duval BRS 91389 had recently rejoined the Society as a swl. He has been interested in the hobby since 1960. His station comprises an Eddystone 730/4, home brew ATU and a wire antenna. Since restarting, he has logged 167 countries, mainly on the hf bands. He considers his best DX to be 9V1WP. He would like the column to feature a small technical topic each month, so we shall have to see what we can manage (this goes with an idea put to me recently that a monthly swl antenna design might be a good idea). Any other new ideas you would like to see incorporated?

Lastly this month, a letter which just heat the deadline from Tel Crane BRS1336. As the number suggests, Ted has been a Society member for a very long time, but has only now written in the column. Originally licensed in 1939 as '2CHC', he sent a photostat of a letter he received in June 1936 from the Chief Wireless Officer of the Queen Mary thanking him for a report on the ship's signals. A fine piece of history, indeed.

Since 1982, he has logged over 1000 stations on 7MHz cw on a G3VCA designed superhet receiver.

FINALE

Thanks to YOU, the listeners, we have a longer column this month. Please continue to support the column and we might regularly get this much space. It's up to YOU!

News, views and other items should reach me by Wednesday 12 October for the December column.

HF 1988 TABLE

Station	DXCC	26	21	14	7	3-5.8	TU
BRS8841	248	122	187	215	123	129	54
BRS25429	218	123	153	180	139	126	62
BRS52543	209	113	130	167	117	126	47
BRS1066	142	36	89	106	82	46	45
ORS45992	172	95	109	115	21	20	0
BRS91397	122	35	83	85	48	41	10
BRS90608	143	21	59	109	43	52	12
F11ATZ	135	76	76	39	21	9	0

VHF 1988 TABLE

Station	50	70	144	432	Total
BRS32525	81	25	86	15	207
BRS25429	41	0	55	28	124
BRS31976	2	0	93	28	123
F11ATZ	2	0	66	8	76
BRS52543	0	17	43	13	73
BRS62088	0	0	25	0	25

All scores are countries plus squares on each band.

CONTEST NEWS

COMMONWEALTH CONTEST 1988

The fifty-first Commonwealth Contest attracted 113 entries – a significant reduction on last year, when the "Golden Anniversary" contest was held. Conditions were described variously as mixed, disappointing and (from some parts of the globe) – the best LF conditions ever! An increasing irritant to many entrants was the persistence of a number of non-Commonwealth stations in calling rare contest participants, to the general annoyance of all. It may be that this in some way accounts for the disappointing entry from outside the "large" Commonwealth countries.

The winner of the 1988 contest is, yet again, Lee Sawkins, VE7CC, but with his lead cut to only seven points over John Sluymers, VE6OU/3. In third place is Nigel Royow, 6Y5HN. The top three positions are a re-run of the 1987 result. Top British station is again Al Slater, who achieved fourth position overall.

The shortwave listeners section is won by Brad Bradbury, BRS 1066, with Don Picciullo as runner-up.

Award Winners

Senior Rose Bowl: L Sawkins, VE7CC
Junior Rose Bowl: J Sluymers, VE6OU/3
Col Thomas Rose Bowl: A Slater, G3FJB
Receiving Rose Bowl: C A Bradbury, BRS 1066

Single Band Winners:

7MHz UK: G3DYY
14MHz UK: G4CP
21MHz UK: G3PJT
3-5MHz O/s: VE1EP
7MHz O/s: VK6IT
14MHz O/s: VK6AJ
21MHz O/s: VE3PTQ
28MHz O/s: ZC4EE

Transmit Section

Posn	Call sign	Total
1	VE7CC	6213
2	VE6OU/3	6206
3	6Y5HN	5709
4	G3FJB	4985
5	VK2APK	4529
6	ZC4AP	4470
7	G3PEK	4447
8	G4BUO	4437
9	AX4XA	4384
10	VE5RA/6	4333
11	G4OBK	4115
12	G3LET	4017
13	ZL1AIZ	3720
14	AX2BOO	3479
15	VK2AYD	3150
16	VE3JKZ	2985
17	G3TMA	2965
18	G2QT	2945
19	VE7UJZ	2823
20	AX3XB	2781
21	VE3ST	2690
22	G5MY	2547
23	G3TBK	2533
24	VK2AOF	2499
25	VK6LW	2478
26	ZL1HV	2450
27	G3NOM	2422
28	VK5GZ	2382
29	VK7RO	2377
30	VK2DID	2325
31	VK4XW	2302
32	VK8AV	2255
33	G3APN	2210
34	G3KMQ	2178
35	VK6RU	2120
36	G2HLU	2065
37	G4ODV	2045
38	VK3DO	1960
39	G3ESF	1958
40	G4WYG	1898
41	G2HPF	1887
42	ZB2BU	1886
43	V188SA	1860
44	G3GLL	1815
45	G3SWH	1810
46	G3GC	1800
47	G4CP	1795***
48	VK4OD	1761

Pos	Call sign	Total
49	VO1CA	1760
50	G3SUX	1752
51	G3VDL	1735
52	VP2MT	1699
53	GW3JI	1665
54	G3EFS	1650
55	VK3JI	1640
	GM3CIX	1640
	G3NAN	1640
58	GM3CFS	1615
59	VE2KN	1590
60	VE6APN	1495
61	VK6AJ	1460***
62	VK3MR	1440***
63	VK7RY	1387
64	VK3DNC	1372
	VK4TT	1372***
66	G3MPB	1345
67	VK1CA	1330
68	AX3KS	1279
69	G3HJF	1267
70	VE1KB	1220
71	VK3MJ	1216
72	G3AWR	1180
73	Z23JO	1150
	G3NKS	1150
75	5N0ELT	1144
76	VK3BDH	1090
77	G4LZB	1085
78	VK3DOV	1037
79	G3LIK	1013
80	G4GK	989
81	G3IOF	955
82	G3JKY	950
83	G3PJT	945***
84	VK2AIC	942
85	ZL3AGI	905***

Pos	Call sign	Total
86	ZC4EE	865****
87	G3ZDW	835
88	VK4BKM	832***
89	VE4MF	790
90	VK3XF	780
91	G2BLA	752
92	VK5AGX	735
93	G4AZN	730****
94	G3DYY	710**
	VK6IT	710**
98	G8OZ	700
97	GW4XXF	645
98	VK5HO	575
99	GM3ITN	540***
100	G4HZV	505
101	VK7ZO	467
102	VK5BS	460
103	VU2TJW	442
104	G6NK	396
105	VE3TEE	390
106	G3CWL	360
107	VE1EP	355*
108	G3KTT	340***
	9J2BO	340****
110	VE3PTQ	335***
111	VK7CH	217***
112	VE2AEJ/3	125****
113	G3KSK	105****

*3-5MHz **7MHz ***14MHz ****21MHz *****28MHz

Receive Section

Posn	Call sign	Total
1	BRS 1066	2505
2	BRS 52868	1982
3	BCRS 195	1763

How the leaders made their scores

Call sign	3-5MHz	7MHz	14MHz	21MHz	28MHz
VE7CC	41 33 18	65 42 22	223 51 23	104 41 21	38 27 13
VE6OU/3	49 20 13	127 50 24	222 45 23	159 41 22	18 15 11
6Y5HN	39 17 10	136 40 19	270 55 22	106 29 17	7 7 5
G3FJB	36 25 15	63 41 28	112 69 34	61 33 19	11 11 7
VK2APK	29 23 9	107 42 20	147 44 21	54 30 15	4 4 4
ZC4AP	17 6 2	115 9 6	230 44 21	145 14 9	85 9 6

O – number of OSOs B – Bonus OSOs A – number of aces.

Equipment used by the leaders:

VE7CC	TS820/L4B	80m:	dolla loop @ 100ft inverted-vee @ 100ft phased 1/4 wave verticals
		49m:	2 element yagi @ 105ft
VE6OU/3	TS940S/ Ten Tec	20/15/10m:	3, 4 and 5 element yagis @ 55 to 100ft
	Titan	80m:	slopers
		40m:	3 ele yagi @ 150ft
		20m:	6 ele yagi @ 150ft
		15m:	4 ele yagi @ 160ft
		10m:	5 ele yagi @ 160ft
6Y5HN	TS180S/SB201	80m:	Inverted vee
		40m:	phased verticals
		20/15/10m:	4 ele tri-band yagi @ 50ft
G3FJB	T4XC/R4C	80m:	loop
		20/15/10m:	3 ele quad

UK Results

Pos	Call sign	Total Pts	Pos	Call sign	Total Pts
1	G3FJB	4985	17	G2HPF	1887
2	G3PEK	4447	18	G3GLL	1815
3	G4BUO	4437	19	G3SWH	1810
4	G4OBK	4115	20	G3GC	1800
5	G3LET	4017	21	G4CP	1795***
6	G3TMA	2965	22	G3SUX	1752
7	G2QT	2965	23	G3VDL	1735
8	G5MY	2547	24	GW3JI	1665
9	G3TBK	2533	25	G3EFS	1650
10	G3NOM	2422	26	GM3CIX	1640
11	G3APN	2210		G3NAN	1640
12	G3KMQ	2178	28	GM3CFS	1615
13	G2HLU	2065	29	G3MPB	1345
14	G4ODV	2045	30	G3HJF	1267
15	G3ESF	1958	31	G3AWR	1180
16	G4WYG	1898	32	G3NKS	1150

33	G4LZB	1085
34	G3LIK	1013
35	G4KGG	989
36	G3IOF	955
37	G3JKY	950
38	G3PJT	945***
39	G3ZDW	835
40	G2BLA	752
41	G4AZN	730***
42	G3DYY	710**
43	G8OZ	700
44	GW4XXF	645
45	GM3ITN	540**
46	G4HZV	505
47	G6NK	396
48	G3CWL	360
49	G3KTT	340***
50	G3KSK	105***

7MHz *14MHz ****21MHz

ACTIVITY AND CONDITIONS

Again 14MHz supplied by far the majority of the traffic in the contest. 21MHz provided reasonable G to VK/ZL traffic, but has yet some way to go before it really shows its potential. 28MHz was the disappointment, with few significant openings. To repeat the comment in last year's contest report, "perhaps next year?"

The path from G to VK/ZL on 7MHz and 3.5MHz was disappointing, with very few contacts with ZL on 3.5, and a marginal path to VK6. 7MHz, although better, did not live up to expectations for long-haul contacts.

Several stations commented that although the old faithful callsigns were in there again this year, there were disappointingly few newcomers evident. The logs show some new faces, but there must be some concern that the CW "art" is a dying one. Many entrants commented on the unique nature of the Commonwealth Contest and the regular entrants pledge continuing support. The HF Contests Committee would like to have seen more logs from the rarer countries, known to have been active in this year's contest, but who chose not to submit an entry.

GB5CC was again active, this time from the OTH of G3OZF, and made over 400 QSOs, operating the full 24hrs. However, the main TS930 transceiver developed a fault in the first hour of the contest, and for the majority of the contest a small TS680 was used which, although very effective, lacked the receive dynamic range necessary on 3.5 and 7MHz in such conditions. Apologies to all those who heard GB5CC but could not attract his attention!

Once again, thanks are due to a number of stations who submitted check logs - G3WP, G4OTU, G4UOL, GD3HDL, GW3SB, VE3EK and VE7COP. Particular mention should also be made of John Tullon, VK3ZC, who mounted a mini expedition to VK1 for the contest, to operate as VK1CA.

Several stations who submitted entries will find their claimed scores have been drastically changed - in some cases upwards, in other cases downwards. It pays to read the rules when completing your log!

A number of entrants asked why last year's results contained scores which did not divide by five - given the scoring basis for the contest. The answer is that the adjudicator deducts points according to a defined formula for errors in QSO exchange information, which, as again this year, leads to scores which do not necessarily remain divisible by five.

The Commonwealth Contest will be back next year. See you in there!

G3OZF

432MHz - 24GHz Contest Results

This contest can probably be best summed up in one word - disappointing. Conditions were almost universally described as poor but judging by the best Q column the real problem was simply lack of activity, especially from the UK - a point made by several entrants.

It is obvious from the logs that the South Eastern stations are still losing contacts by not beaming inland often enough to attract the stations that only come on for short periods, but who can blame them when there is so much more activity on the continent? (These provided approximately 80 per cent of contacts for "east coast stations").

Communications between different bands operated by some groups still seems to be very poor - surely it's a spani arranging tests and aligning aerials for higher bands must produce more worthwhile results than relentlessly calling CQ with no answer?

On the positive side it is nice to see activity on the "middle" bands improving, especially from the fixed stations - the hall points for crossband contacts must be producing the required incentive to try new bands. A special mention here for G8CHW who dug his 9cm converter out during the weekend "just to see if it worked" and nearly beat G6DER in the process! Maybe next year he will have transmit capability?

Several comments were received about the inability of stations to raise interest in 10GHz. Perhaps attention should be paid to arranging proper talk back facilities remembering that many 10GHz stalwarts only have 2M available for this? It is possible that we might arrange for one of the 10GHz cumulatives to coincide with this contest next year to help boost activity - your comments, for or against please.

Finally thanks to all who continue to support this event and congratulations to all the certificate winners especially G6DER the overall single operator winner and Hadrabs and Tarts C.G., the overall multi operator winners.

G4NBS

432MHz Single Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G6DER	205	27	93GN	DF1 VW/P	728
2	G1KDF	175	25	83NN	PE0MAR/P	582
3	GW7AGW/P	113	25	81KW	G4PUB/P	322
4	G8YLW	106	15	01HI	DF1 VW/P	493
5	G4PMK	100	12	93GT	PE0MAR/P	426

432MHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G8TFI/P	3062	272	01KK	400 DK7NP/P	735
2	G4PUB/P	2838	232	01QE	350 OK1 QIG/P	884
3	G4THB/P	2152	164	94RJ	400 DJ6GK	744
4	GW4BVY/P	2127	205	82KO	400 DL8QS	817
5	G4RVJ/P	1878	184	81CC	400 DD3JN/P	760
6	G0FRF/P	1826	207	90AP	400 PI4ZOD/P	658
7	G4HRY/P	1240	164	92NQ	400 DJ9RX	660
8	G8ZHP	880	105	92TR	400 DL4VS	643
9	G3FVA/P	763	123	93EH	120 DL2KBB	597

1296MHz Single Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G4DDK	202	26	02PA	50 G4JKN/P	366
2	G8CHW	187	40	91TO	100 PE1ALA	412
2	G4ZTR	187	29	01LV	100 G6LEU	454
4	G1KDF	144	22	83NN	32 PE0MAR/P	582
5	G4PMK	135	21	93GT	60 G4RFR/P	353
6	G6DER	115.5	21	93GN	100 PE0MAR/P	414
7	G0AWP/P	63	11	94QA	30 PA0GUS/P	423

Overall Positions Single Operator Section						
Pos	Callsign	432Mz	1296Mz	2320Mz	3456Mz	Total Pts
1	G6DER	1	6	1	1	3571
2	G4DDK	-	1	2	-	1958
3	G8CHW	-	2	-	-	1831
4	G1KDF	2	4	-	2	1565
5	G4ZTR	-	2	3	-	1504
6	G4PMK	5	5	5	3	1488

Multi Operator Section Positions achieved on each Band						
Pos	Group	432	1296	2304	3456	5760
1	Hadrabs & Tarts C.G.	2	1	3	2	1
2	Sheppay Combined C.G.	1	3	2	1	-
3	The Hillbillies	3	2	1	-	3
4	Exmoor R.C.C.G.	5	5	4	-	-
5	Flight Reluctant ARS	6	4	-	-	5
6	Thros Spres C.G.	7	8	5	-	2
7	Malvern Hills C.G.	4	9	-	-	-
8	S. Manchester R.C.	9	7	6	-	4
9	Five Bells C.G.	8	6	-	-	-

Certificate winners indicated by *

3.5MHz HOPSCOTCH 1988 CONTEST RESULTS

Pos	Callsign	Pts	Pos	Callsign	Pts
1	G3LET	510	14	G3OPX	300
2	G3SJJ	484	15	G3KJZ	280
3	G4QGB	466	16	G3MCX	276
4	G4BGU	428	17	G4PTE	240
5	G0CKP	390	18	GM3UM	240
6	G3BPM	380	19	G3JSK	218
7	G4WZV	372	20	G0DJF	200
8	G3CQR	366	21	G3MCK	180
9	G0CGB	354		G4ZME	180
10	GW4HDB	348	23	G0HGA	154
11	GW3SB	340	24	G4BUQ	130
12	G0IVZ	338	25	G4PZF	124
13	G3HKQ	318			

*Certificate winners.

2320MHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G4XUM/P	5478	22.5	94RJ	120	PA0EZ 451
2	G0FRE/P	3378	16	01KK	40	G8JHL 316
3	G4ALE/P	2722	15	01QE	35	G4XUM/P 380
4	G4HGU/P	1970	7	81CC	40	G4XUM/P 426
5	G4OSF/P	461.5	4.5	92NO	0.4	G4XUM/P 191
6	G8SMR/P	398	5	93EH	0.4	G4XUM/P 139

3456MHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G6DER	122.5	2	93GN	200	G4BYV 191
2	G8CHW	111	2	91TQ	-	G4LE/P 133
3	G4PMK	27	1	93GT	2.5	G6DER 27

3456MHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G0FRE/P	580	3.5	01KK	1.8	PA0WWM 260
2	G4JAR/P	358	2.5	01QE	5	PE0MAR/P 209

5760MHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(mw)	Best Ox Kms
1	G4EZP/P	19	1	01QE	10mw	G8KBV/P

10GHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G4EZP/P	317	4	01QE	250	PE0MAR/P 209
2	G0DJA/P	68	1	92NO	5	G6UED/P 68
3	G4UJS/P	17	2	94RJ	5	G4LIP/P 15
4	G4NTY/P	5	1	93EH	10	G0AOU/P 5

24GHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(mw)	Best Ox Kms
1	G4EZP/P	36	3	01QE	8mw	G8KBV/P

1296MHz Multi Operator						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G0ALE/P	922	90	01QE	400	DL5HAF/P 580
2	G4HWA/P	898	76	94RJ	250	F1DED 652
3	G4ZAP/P	723	87	01KK	200	01OZN 662
4	G4RFR/P	370.5	44	90AP	200	PA0WWM 532
5	G4JKN/P	280	26	81CC	180	F1EAN 575
6	G4SIV	166	26	92TR	150	PA3BLS 360
7	G3UHF/P	138	28	93EH	100	G0ALE/P 312
8	G4IEV/P	106	25	92NO	20	G4RFR/P 238
9	GW4GFX/P	24	4	82KO	2	G6HKM 247

2320MHz Single Operators						
Pos	Callsign	Pts	QSOs	LOC	P(w)	Best Ox Kms
1	G6DER	1449	11	93GN	20	PE0MAR/P 414
2	G4ODK	1446	11	02PA	7	G4HGU/P 366
3	G4ZTR	839	7	01LV	5	G4HGU/P 340
4	G3ZTR/P	679	5	94QA	0.5	PA0GUS/P 423
5	G4PMK	164	3	93GT	10	G4XUM/P 88

Overall Positions Multi Operator Section						
Pos	Group	432	1296	2304	3456	5760
1	Hadrabs & Tarts C.G.	2	1	3	2	1
2	Sheppay Combined C.G.	1	3	2	1	-
3	The Hillbillies	3	2	1	-	3
4	Exmoor R.C.C.G.	5	5	4	-	-
5	Flight Reluctant ARS	6	4	-	-	5
6	Thros Spres C.G.	7	8	5	-	2
7	Malvern Hills C.G.	4	9	-	-	-
8	S. Manchester R.C.	9	7	6	-	4
9	Five Bells C.G.	8	6	-	-	-

Total Pts						
1	Hadrabs & Tarts C.G.	6040				
2	Sheppay Combined C.G.	3408				
3	The Hillbillies	2729				
4	Exmoor R.C.C.G.	1275				
5	Flight Reluctant ARS	1000				
6	Thros Spres C.G.	817				
7	Malvern Hills C.G.	720				
8	S. Manchester R.C.	485				
9	Five Bells C.G.	467				

The best day of the year for weather, kept some out of the shack and sent others off to Woburn. The number of entries, however, was similar to last year. Many entrants commented on the friendliness of this contest and how QRS was the order of the day! It was good to see some first-time contestants having a go, with G0CKP gaining a creditable place with a perfect log. The HFCC will be looking at ways of improving activity in this contest; if you have any constructive comments please send them to G4JKS OTHR.

Equipment used by the top three stations - G3LET used an FT One with an inverted U with a loop of 6811 at a height of 351. G3SJJ was running a TS930s with a 1301 centre lead antenna at 361. G4QGB ran a TS830m with a double zepp at 481. G4JKS

CONTESTS CALENDER

RSGB HF CONTESTS

9 Dcl	21/28MHz SSB (Rules in May issue)
10 Dcl	28MHz Cumulative CW/SSB (Rules in September issue)
16 Dcl	21MHz CW (Rules in May issue)
18 Oct	28MHz Cumulative CW/SSB (Rules in September issue)
22 Dcl	DF Tieble Night Event Mid-Thames
26 Dcl	28MHz Cumulative CW/SSB (Rules in September issue)
3 Nov	28MHz Cumulative CW/SSB (Rules in September issue)
11 Nov	28MHz Cumulative CW/SSB (Rules in September issue)
19, 20 Nov	Second 1-8MHz Contest (Rules in September issue)
8 Jan	3-5MHz CW Affiliated Societies Team (Rules in October issue)
25, 26 Feb	7MHz CW (Rules in October issue)

RSGB VHF CONTESTS

1, 2 Dcl	432MHz-24GHz/IARU UHF/SHF (Rules in January issue)
6 Dcl	432MHz Cumulative (Rules in January issue)
14 Oct	1-3/2-3GHz Cumulative (Rules in January issue)
22 Dcl	432MHz Cumulative (Rules in August issue)
23 Dcl	50MHz Trophy (Rules in January issue)
30 Dcl	1-3/2-3GHz Cumulative (Rules in August issue)
5, 6 Nov	144MHz Cumulative
7 Nov	432MHz Cumulative (Rules in July issue)
12 Nov	Club Calls Contest (Rules in September issue)
15 Nov	1-3/2-3GHz Cumulative (Rules in August issue)
23 Nov	432MHz Cumulative (Rules in August issue)
1 Dec	1-3/2-3GHz Cumulative (Rules in August issue)
4 Dec	144MHz Fixed and AFS and SWL (Rules in August issue)
9 Dec	432MHz Cumulative (Rules in August issue)
11 Dec	70MHz CW (Rules in August issue)
17 Dec	1-3/2-3GHz Cumulative (Rules in August issue)

OTHER CONTESTS

1, 2 Oct	VK-ZL Oceania DX Contest (Rules in September issue)
2 Oct	ON SSB Contest (Rules in October issue)
8, 9 Oct	VK-ZL Oceania DX Contest (Rules in September issue)
9 Dcl	ON CW Contest (Rules in October issue)
15, 16 Dcl	Y2 DX Contest
29, 30 Oct	CQWW DX SSB Contest (Rules in September issue)
12, 13 Nov	OK DX Contest
12, 13 Nov	DARC WA Contest (Rules in August issue)
19 Nov	RNARS SSB Activity Contest (Rules in October issue)
19, 20 Nov	OVSV All Austria Contest
20 Nov	RNARS CW Activity Contest (Rules in October issue)
26, 27 Nov	CQWW DX Contest
3, 4 Dec	URE DX Contest
3, 4 Dec	ARRL 160 Metre Contest
10, 11 Dec	ARRL 10 Metre Contest

APRIL 144MHz & SWL CONTEST RESULTS

This event was beset by poor weather for some entrants, with snow reported in several instances, so it was not surprising that there were calls for this event to be moved to May. Despite not being able to go portable and suffering a power cut because of the weather, GM0FRT managed a very good score. Activity was generally commented on as being rather low, and conditions were unremarkable, although some good DX was worked towards the end of the event.

Most logs were quite accurate, but one log was disqualified for cumulative errors in recording the serial number sent. Otherwise logs were satisfactory apart from the lack of multiplier check lists in half a dozen instances. Checking for alternative multiplier contacts in the list one was not valid proved to be a time consuming process, however. The multiplier scoring system was commented upon favourably, and it was certainly noticeable that the logs contained a higher proportion of G contacts than in non-multiplier events.

Certificates go to the Hillbillies (G4APA/P) as winners of the Multi Operator section, with the Flowerpot Men (GW8SJP/P) as runners up. In the Single Operator category the leading award goes to Andrew Cook (G4PIO), and runner-up award to Ela Martyr (G6HKM). BR531976 receives the leading SWL certificate.

This report has been prepared from notes supplied by the adjudicator, G4JLG.

Single Operator Section						
Pos	Call	Pts	Mult	QSD	LDC	BEST DX KMS
1	G4PIO	296856	62	490	01MU	DL6NAA 772
2	G6HKM	236224	64	438	01FT	DF6IY 651
3	GM0FRT	200192	64	194	87WB	ON1CAK 801
4	G6KZP	138176	64	365	91RP	GM0FRT 611
5	G1RER	100548	59	336	01AK	E1SFK 593
6	G4ARI	92800	64	232	92IQ	E1SFK 500
7	GI VDWQ/P	69768	57	208	80WP	GM0FRT 713
8	G4AHN	69440	62	164	91OE	GM0FRT 642
9	G6ZRE	56420	52	181	83NE	GM0GMD 450

Pos	Call	Pts	Mult	QSD	LDC	BEST DX KMS
10	G8KHR	40424	31	134	02SL	OG6BM 485
11	G0EGX	32572	34	146	01T	DD0PX 512
12	G1YNR	22560	40	107	93QN	G1HHD 421
13	G6HXU	17080	41	100	83RF	GM0FRT 427
14	G1CRH/P	13615	35	68	92WK	GM0FRT 521
15	G6MXL	11840	32	63	80XR	G4APA/P 420
16	G1UXA	5814	17	64	01FJ	DD3JNP 458
17	G3BPM	5037	22	27	80CW	GM0FRT 682
18	G6NUZ	4512	24	30	92XW	G3XBY/P 376
19	GW0CDA/P	4233	--	510	82KW	DD9KE 750
20	GW8CMU	176	--	25	81HJ	G4APA/P 384
21	G2DHV	158	--	40	01BK	G4APA/P 330
22	G6PZZ	156	--	22	82SP	G3XBY/P 265

Multi-Operator Section						
Pos	Call	Pts	Mult	QSD	LDC	BEST DX KMS
1	G4APA/P	1071788	94	833	94RJ	HB9AEN/P 974
2	GW8SJP/P	810167	89	845	82JJ	HB9AEN/P 936
3	G6CMS/P	591290	70	755	01PU	OE9MDI 778
4	G3XBY/P	585434	74	655	80FI	DF6IY 873
5	G4SIV	433624	67	562	92TR	DJ0YS 805
6	G4WET/P	430350	75	716	92CA	DF6IY 784
7	G8LNC/P	364894	77	505	80AQ	DD3JNP 772
8	G4ERG/P	351975	65	511	93UK	DF6IY 789
9	G5RS/P	318582	68	610	01AG	OZ1ALS 773
10	G3GQC/P	278915	67	554	93ED	DD9EY 731
11	G1KAR/P	267465	56	476	00DR	DL6NAA 815
12	G0CLP/P	255255	67	466	84KD	F6HP/P 699
13	G4VAT/P	233508	72	447	91TW	DF6IY 708
14	G6CSY/P	217750	65	485	91XG	FC1JRX 664
15	G1SGB/P	210560	73	426	93FK	GUIDKM 670
16	G0GR/A	185776	70	428	81UJ	DK1BM 664
17	G4NOK	157885	65	337	93FR	F6HZA 625
18	G3TCR/P	142166	62	420	91JH	DF7DJ 626
19	G4ZGY	64183	53	198	02GJ	G0AEA 578
20	G6LKB/P	50278	46	167	90WT	G1KKY 435
21	GM0GMD	27495	45	64	86AE	G3XBY/P 649
22	G4YCD	2476	--	358	81RM	GM3TSL 626
23	G6NLD/A	582	--	127	93JA	G0AEA 490

Listener Section

Pos	RS No	Pts	Mult	QSD	LDC	BEST DX KMS
1	31976	18603	39	39	01HO	GM0FRT 632
2	28198	9072	28	50	00HX	DF7DJ 490
3	32525	524	--	100	01AL	DF6IY 660

Check Logs: PE1EWR, G4ILI, G1MMR, G8JXV.
Disqualification: G1RDX/P (Rule 19).

MID-THAMES DF QUALIFYING EVENT - REPORT

Twenty teams took part on a Sunday afternoon on which rain was expected; however, the weathermen were wrong in the case of this part of Berkshire and the afternoon proved to be dry. The start was at Bury Down on the Ridgeway path, a very high place with spectacular views in all directions. Good signals were heard, the organiser breathed a sigh of relief and the teams set off southwards for the two transmitters. Station "A", G4MDF/P, was located in Great Pen Wood, just South of Newbury, in approximately the middle of a very large and dense patch of rhododendrons. It was so dense that the operators had spent more than six hours pulling up the antenna the previous day. Station "B", G4CUE/P, was hidden in the undergrowth on the North bank of the River Kennel close to Woolhampton. The antenna was particularly long and most of the wire was actually on the South bank in the evil-smelling swamp was little more than high vegetation. The obvious way into the "B" station was a long run along the South bank, the aim being to equalise the time taken to get back from the station to the car with that taken to crawl out of the rhododendrons at station "A".

Station "A" caused more difficulty to most competitors although several cries and oaths were heard from teams who had fallen foul of the swamp near station "B". Those were many tales told afterwards of the problems with the rhododendrons, it was very easy to lose track of the whereabouts of members of one's team as they all crawled at ground level through the interwined branches. One team left one of its members in the undergrowth and drove off to the "B" station having decided that it was more important to find the other station. Another team had the family dog in the car but left him at the side of the road in the haste of taking a bearing, amazingly, the dog managed to follow the car and turned up when the next bearing was being taken just as his absence was noticed. Several teams reported that they had successfully found the station but then were unable to find their car having come out at a different place from where they entered. At first (and second) glance the rhododendron branches appeared impenetrable but it is amazing what adrenalin can do when the station starts to transmit; some teams were seen actually to run through the bushes until usually missing their footing and tripping over. This practice resulted in cuts and bruises but was not very effective in the close vicinity of the transmitter where the branches were particularly dense.

The event was won by Khee Chan, from Manchester, who found his second station at 15:47. Second place went to Andy Collett at 15:50. Neither of these two competitors have been in the high positions before and it was very pleasant to see them both qualify for the National Final.

Trevor Gage and Bill North did, in fact find the "B" station but only after the end of the contest; the operator had continued for a little longer than normal for the sake of pity after hearing cries from the swamp.

Mid-Thames DF - Results

Pos.	Name	Club	Time of arrival	Sin A	Sin B
1	K Chan	South Manchester	1547	1445	
2	A Collett	RSGB	1550	1442	
3	G Foster	Stratford-on-Avon	1553	1438	
4	C Wells	South Manchester	1554	1443	
5	C Plummer	Mid-Thames	1516	1606	
6	P Labalastier	Devizes	1458	1607	
7	M Mallinson	Barbury	1614	1442	
8	A Simmons	Mid-Thames	1616	1438	
9	G Nicholls	Barbury	1618	1441	
10	D Newman	Northampton	1623	1443	
11	R Brooks	Chelmsford	1544	1624	
12	A Williams	Brainfree	1626	1517	
13	I Bulson	Colchester	1630	1506	
14	W North	Mid-Thames	1457	--	
15	J Drakeley	Slade	--	1505	
16	B Poole	Mid-Thames	1545	--	
17	A Mallon	Mid-Thames	1546	--	
18	T Gage	Mid-Thames	1546	--	
19	R Pearce-Boby	Oxford	1553	--	
20	G Whenham	Covenry	1558	--	

K Chan and A Collett qualify for the National Final.

home and abroad. Congratulations on a magnificent record and may the next 75 years be as fruitful."

David Rankin, 9V1RH/VK3QV,
Chairman of Directors, IARU
Region III

"Throughout its existence the Radio Society of Great Britain has been a leader, effective spokesman and active participant in the world amateur community. On behalf of the Directors, Officers and members of the Canadian Radio Relay League, please accept our sincere congratulations and best wishes on the 75th anniversary of your Society."

Thomas B J Atkins, VE3CDM, CRRRL
President

"Please accept my warmest congratulations, and those of my Department, on the Society's 75th anniversary. Amateur radio's contribution to the development of radio in this country is well recognised. We applaud its role in furthering technical advance in radio, in spreading technical knowledge and skills widely and encouraging many people into careers in electronics and engineering. Since radio's earliest days, the Society has been at the forefront of the development of the hobby. We pay tribute to its outstanding record of achievement and service. My Department fully supports the aims of the Society's Project Y.E.A.R. - 'Youth into Electronics via Amateur Radio'. We well recognise the importance of amateur radio on a starting point for our radio engineers of the future. For this reason, we are glad, as a contribution to the 75th anniversary year, to offer, in conjunction with the Society, the 'Young Amateur of the Year Award'. We look forward to hearing more from the Society about Project Y.E.A.R. The concept of a student licence is an exciting one. I offer the Department's fullest co-operation in discussing these proposals with you over the next few months."

John Butcher MP, Parliamentary
Under Secretary of State for
Industry & Consumer Affairs.

Next month, we hope to be able to publish the full text of His Royal Highness Prince Philip, The Duke of Edinburgh's speech given during the opening of this year's National Convention in Birmingham.

The December issue will carry a photographic round-up of the 75th Anniversary celebrations and a super Christmas Quiz!

CRIME PREVENTION AT NEC:

For the first time since the Society has been running its National Convention at Birmingham, the local Crime Prevention Department was invited to put on a stand - with the aim of giving visitors hints and tips on protecting their amateur radio equipment in the home and in cars.

The West Midlands Police Crime Prevention Department responded eagerly to our invitation; they duly set up a magnificent stand complete with two Crime Prevention Officers, who were on hand to give expert advice. This proved amazingly popular, and indeed they had to send back to their HQ for more literature three times on the first day!

Several examples of door locks, window locks and alarms were on display. Also on the stand was a car rigged out with various alarm systems, and visitors were invited to try and enter the vehicle without setting off the alarms. The alarms were heard sounding throughout the day and one can only assume that no-one was successful!

One of the most useful publications available from the stand was a booklet entitled "Practical Ways to Crack Crime". It covers protection of your family, your home, your possessions, your neighbourhood, your community and your workplace as well as giving a comprehensive list of other crime prevention publications. Copies of the booklet are freely available from your local crime prevention unit or the Home Office.

At some point in the future we hope to be able to run a series of articles on crime prevention in the News Bulletin.

75th ANNIVERSARY SOUVENIRS:

In the July issue of RadCom we mentioned a number of special 75th Anniversary souvenirs which are available to members, and with Christmas just around the corner (yes - only 72 more shopping days to go!) you might like to have a look at what we've got on offer. These items have been in great demand since the announcement, but a few are still available for those who haven't yet got round to sending off for them.

ANNIVERSARY CALENDAR:

The calendar was produced in response to a great many letters from members who wanted copies of the recent 'sepia' RadCom covers. It commenced at July 1988 and will end at December 1989 - in other words it runs for eighteen months.

It is printed on high quality

silk-finish paper suitable for framing with each sheet carrying three month's worth of dates. When the calendar itself has timed-out you can chop that bit off the bottom and frame the print. These splendid items were originally available from RSGB HQ at a cost of £2.30 over the counter or £2.95 by post. However, if you buy one now for next year, not only will you get three 'bonus' months so you can hang it up straight away, you'll also get it at the pre-Christmas special offer price of £1.50 for members over the counter and £1.95 by post!

ANNIVERSARY TIES:

These navy blue ties are of a higher quality than our standard ties and depict, within the limitations of the weaving process, the anniversary logo just below the knot - they'll go very well with that new shirt you're getting for Christmas. They are in a limited edition and are selling very fast so be sure to get yours before they sell out! You can pick one up from RSGB HQ and the cost, to members only, is £5.50 over the counter or £5.95 by post.

ANNIVERSARY BADGES:

These hand-finished enamel badges of the 75th Anniversary logo have been selling like hot BFY50s. They are in red, white and blue with gilt edges and a pin fastening. Again, they are in a limited edition and look very smart on any lapel. The cost, to members only, is £1.95 over the counter or £2.10 by post.

ENGRAVED CRYSTAL WHISKY TUMBLERS:

These extremely posh Rowton Crystal whisky tumblers are engraved with the 75th anniversary logo - ideal for a Christmas tippie! Like the other souvenir items, they are in a very limited edition and are quickly becoming collectors' items. They are presentation boxed in pairs or singles and are available over the counter at RSGB HQ or from RSGB stands at rallies. Singles only are available by mail-order at a cost of £9.25. The over the counter prices to members only are £7.95 each or £15.95 for a pair (contents NOT included, before you ask....)

QSL CARDS:

For many years now the Society has been looking at the possibility of producing QSL cards for members. The difficulty has always been the printing of call signs onto individual cards, but since many

Members' Ads

The Conditions of Acceptance are published below the Member's Ad form circulated with every issue of *Radio Communication*.

The current rate is £2.30 for 40 words or less: advertisements containing more than 40 words will cost an additional £2.30 for every additional 40 or less words. Each advertisement must be accompanied by the correct remittance, either as a cheque or postal order made payable to Radio Society of Great Britain.

All members' ads received up to 17 August have been included above.

FOR SALE

MORSE KEY EX*RAF type D. Complete with cover. As original. Immac £30. Tel: C4C0Y, 051-260-9192.

SONY HVC2010 COLOUR CAMERA inc 25ft extension lead £85. Tx/rx rttv/amt on BBC micro. C3UV decoder, plus C3WH0 ROM £60. Yaesu ET290 orig pkg, vgc, £250. BBC micro professionally RF screened APTL ROM/ROM board, 80/40 track double sided disc drive. Extensive software/rom collection inc games/utills radio prog, £350. Tel, G4M10. Tel: (SuffToK) 0359-37520 (after 6.30pm).

FT790 PLUS NICA05 £250. F1290 plus nlcds, £200, carrying case, charger, Yaesu mobile mount also available. BBC Master 128 £300. Microwave Modules travtr 50/144 £250. WANI10: FT726 SOMHz module. G6201, OTHR. Tel: 0757-85-8185 (North Yorks).

TR10 T5780 2M/70CM dual bander, £680. Realistic scanner PRO2021, 200 memories, £140. Solid State broad band linear amp. SL2500X 1.6-30MHz. 200w ssb £60. C1WCF, Martin, OTHR. Tel: 061-688-8789 (Oldham).

F1101E CW FILTER 0/bal mixer 10MHz +fm fan, dc conv, £420.00. FV101 £70.00. Ex/spkr £30.00. Maplin peak/notch filter, ex condx £25.00. FDK multi 2700 base 2m rig, sbb/sm/cw/fm wldo/narrow satellite facilities preamp rlt/vox ec/dc etc. Good condx, £275.00. GEC 4m am rig, crystallised 70.26 £250.00. Pye Wlsu 70cm Westminster, ex condx. All controls SU18, RBO £45.00. 2 Pye Vanguard. OK linear etc, complete all valves, £100.00. BREM1 BRL200 linear, good 10m £35.00. Philips 4307 4-track open reel recorder, ex condx £150.00. R1091 reception set 1.8-8.5MHz, offers. R107 1.2-17.5MHz reasonable offers. VTX5000 Modem for Spectrum etc, manual, s/ware, £30.00. Other items too numerous. GDELE, not OTHR. Tel: (Colne, Lancs) 0282-869609 (after 6.45pm).

FT207 INC F151 K1C, charger, spare battery £110; INC200 32K ram V1.1, £120; DEC V1102 professional serial terminal 50-19200 baud, 132 column, printer port £110; Oregon 64, disc controller, 80T OS 00 drive, flex operating system, lots of software, £120. STSC terminal unit, 2 shifts in box, £70. 100-200MHz cavity oscillator, uses 2x6C4 valves, inc stabilised heater supply, £50. AM70210, 7211 modem chips, with full info £55. Modem cards 300 band using HC14412 inc filters, line transformer end orig/onswer switch, £10 the pair. 6800 cpu's on cards with 6810's, 6850, 6842, full information on chips, the pair £5. Plessey SP8659B -16 at 200MHz 2 for £5; 4059 programmable dividers £2; ex-equipment, 27256 aprams £1. 54HC74 x4 £1; 54HC244 £1, 54HC154 x4 £1, 54HC373 £1, 54HC1254 £1 54HC05 x4 £1, 54HC541 £1, 54HC00 x10 £1; Herlis 80C85 cpu £10 for 3; WANTED: Icom IC271 with Mutek board, Andy, Guildford, 0483-34954.

FT767GX FULLY MODIFIED. All options. 70cm/6m/2m mint condx. Sale due to overspending, £1500, or near offer. WANTED: SP980 speaker, must be mint. Howard, COH2H. Tel: 0394-460-474.

A1475 WITH PSU. B28 (CR100). Exchange AR880 (consider incomplete). WWII RAF radar units or parts. Cutted rusty MYHT WANI10; any information or parts for AR15513 comprising TR3188, T3538, R3189, R3537. Costs paid. Phil, G6MJJ, OTHR. Tel: 0483-572653 (evenings/weekends).

AMT1 AMTOR/CW/RTTY converter £140. Icom IC2E 2m handheld £120. Icom IC4E 70cm handheld £160. DK6HP. Tel: 01049-40-677-2627 (Hamburg).

RTTY C410E EPROM ZX81, metal case, proper keyboard, £50 inc terminal unit. KW Vicaroy 80-10m 100w sbb/cw £30. B44 ex WD travtr £10 pair. Stollie rotator, £9. Phillips reel-to-reel stereo, £10.

Tel: C3XVL, Ipswich 689982.

1R9000 2M MULTIMODE, mobile mount, mobile mic, manual, boxed, £275. FT708 70cm h/held, YM24 speaker mic, 2 battery packs, charger, helical 12V power adaptor, manual, boxed, £150. G8NWR, OTHR. Tel: (Evesham) 0386-750380.

BRAND NEW 1296MHz cavity by Micromax, MoTverhamp-ton, c/w fan/bls/heater transformer. See Micro-waves RadCom Dec 87. No 2C39 supplied. Surplus as now have dual valve. £75 plus £3 post. No offers new £120. G6WHY, OTHR. Tel: 0787-237876 (Colchester).

ET207R 2M HANDIE complete £150. Two 80ft lengths 1" diameter 50ohm coax. £255 one. WANTED: 100w carbon resistor for dummy load and vfo or photo-copy details of for F175. G4LRH, OTHR. Luton 415846.

J-BEAM VR3 10-15-20m vertical with radials, £40. Dslwa CWN-518 80-10m antenna tuner combined swr/power meter, £130. Highmound HK704 key, £12. Tel: John, CO1A0, Wakefield 270940.

TR10 T5711E 2M BASE 5A110N. Fitted voice module end in superb condx. Sell for £575 plus carriage or exchange for hf rig with gan cov rcvr, £30, 575 etc. Phone 0229-65359 (evenings). G4VKE, OTHR.

F10120 MK3 H1M1 COH0X, s/valves £550. FT225RD £575 mint. FV1010M digital vfo £110 fm board for 10120 £35. COCTC not OTHR. Tel: 07048-78577.

COMPLETE RTTY SYSTEM COMPRISING Sharp HZ80K computer, serialA interface, terminal unit and sophisticated software package. Plus lots of other software inc for amateur radio. £100. Costello, G3YPP, 3 Northam Avenue, Henlow, Beds. SG16 6ET. Tel: 0462-815533.

FT757GX 10VR £650. FC757AT (atu) £185. Unmarked condx, hardly used. MML432/100 (70cm 100w linear 10w in) cost £389, will accept £160. 6m 3-ele beam, £15, vgc. Howard, COH2H. Tel: 0394-460-474.

ICOM IC70 RECEIVER mint condx, orig pkg end manual, £450. Kenwood/Trio receiver, orig pkg mint condx, £375. Tel: 0702-201615.

YAESU TRANSCEIVER FT10120. Fm, fan, recent alignment, showroom condx throughout. View in action if desired. This OTH. £500. Also Sony ICF7600D multi-band receiver, am/fm/assb/cw with psu. Terrific performer your's for £100. Tel: Eddie, G0A01, 01-445-0528, OTHR.

FT290, £250. FT707 etu, £120. F1707DM £70. FT707 psu £100. F1707 tcvr, £450. KR400RC £130. SH30 mast £230. J-beam 8XV/2m £20. Ray Com ver psu £16. Reace FS 1.5 awr meter, £20. Datong SRB2 £60. Datong Starsmaster key £45. HK704 £15. Hi-mound paddle key, £20. Tokyo 144MHz 30w amp £45. AO 6.20 3 olin beam £140. SA450 antenna switch £15. Atelid dip meter, £20. COBKV, OTHR. Tel: Pelsall 682511.

H1HT FT23R HANDHELD with remote mic/spkr, nlcd £10; 12v charger, case, plus Microwave Modules 144/30/15 linear. First offer £260 secures all. Transformer 240v input; output 3kV ten amps 11 (2-man lift), serious offers for serious equipment Mike, 03306-613 (evenings after 7pm).

1EN-1EC ARCOSY inc 8-pole filter end mains psu, with Datong speech processor. Reliable, easy to operate and service. £395. Prestel modem and software for G8M64 £35. G40BE. Tel: 051-342-7545.

FT200 MATCHING POWER SUPPLY end speaker, good condx, £225. Shure 444 T11 Impedance disk mike, £25. All or nearest offer. G4URW, OTHR. Tel: 0670-812749 (after 7pm or weekends). PLUS Western DX penetrator 10-15-20 £125 or vmo.

FOR SALE: FT6208 S1X meter tx/rx in good condx. WPO morse memory. HM 6m converter 281F, covers 50-54MHz. Prices £200, £30, £25 respectively or exchange any Tor 4m ORO linear with psu or 2m/70cm sbb gear. Blockwood, 0495-228516.

PW MEG1 2-6M travtr kit c/w case, £40, 2 rolls 50m h/d copper wire, £60a. 6m 3-ele Yagi £15. G42111. Tel: 0491-651236.

COMPLETE RECORD COLLECTION must go! Fantastic variety - something for everyone - popular, classical, synthesiser, etc. All LPs in unmarked orig condx. You won't find secondhand LPs ANYWHERE in es good condx. LARGE 5ASE for s complete listing. G3W1A, OTHR.

ICOM 290H 144MHz 25w multimode mobile, £325. Full service manual for IC290A/E/H £10 with rig. Icom AG25 144MHz masthead preamp, boxed, new, unused, auto switching with IC271 £40. Peter, G88CG, OTHR. Tel: 0494-727445 (evenings).

XR500 ELEVATION R01A10R, vgc £100. G4U5J, OTHR. Tel: 060-546-401.

KANTRONICS KPC4 brand new, boxed, unwanted present £250. Kantronics KAM all mode modem, £210.00. INC220 £100. Tel: 0453-83-3411.

15780 2M/70CM multimode base station. Mint condx. Lowe checked orig pkg £730. MML44/100 linear 100w with mutek preamp, £100. Amcom hf atu as new, £65. Hulek 1LNA4325 70cm preamp, new, £38. G4U5J, OTHR. Tel: 060-546-401.

YAESU FTDX401 tcvr, vgc. Will deliver south of Telford, £250.00. 2x4CX250 £150a. WANTED: EL400 tx any condx. Tel: Bob, G3W1N, 0952-594437.

T58305, 500Hz filter, deluxe knob and service manual, £750. 1R9130, vgc never used mobile with sar/manual end access, £350. Both buyer collect. Contact Pat, G4YVJ, OTHR. Tel: (Barnsley) 0226-203737.

YAESU F1290R mutak, nlcds, mobile mount, 25w linear, 5/8 whip, soft case, 582 switch, WH1 headset, £250. Datong motor unit 070. £30. COEVS, OTHR. Tel: 0442-51679.

20FT FREE STANDING lattice tower suitable for any chosen height of centre pole. £70. G4VJU, West Midlands. Tel: 0384-635969.

LATTICE TOWER 25ft three section, triangular 15" sides et base. Accepts rotator and stub mast. Professionally refurbished. Has three ground Insulators and posts for mounting into concrete. Easily transported on roof rack. £75. G4CXM, OTHR. Tel: 0462-53001.

YAESU FT780R UHF multimode as new, never used mobile, £300. Jaybeam 10XV £20. Alkal multimeter £5. G6HFW. Tel: (Manchester) 0942-876796.

COMPUTER TELEPHONE MODEM for sale. Pace Linnet smart modem with auto dial end auto answer. Also has 32 memories. Works on V21 or V23 standards with speed buffering. Includes cable manual and psu. Ex condx. £110. R591566. Tel: 0825-2756.

KW2000 TCVR COMPLETE WITH psu in working order inc manual £100. Also converted CB to 10m multi-mode in good order. No gaps 28.240 to 29.580 £45. Tel: Allan, COCCW, OTHR London. Tel: 01-997-2633.

ICOM PSU30 systems psu cost £300+, £175. Racal RA17 cabinet model £115. Ster 600RX £60. FROX400 with 144MHz £85. All vgc. Yaesu FT203 2m handheld boxed, mint condx, £125. Shure 5261 MkII mic, £35. 01-534-3460 (evenings), 01-553-7308 (days).

KENWOOD 158305, HC355 mic, ex condx, 2 new 61468, cv filter, £725. Major 588 converted 10m am/fm/ sbb 2 microphones, £90. COEHO. Tel: Bromsgrove 79636.

YAESU FT767 MOD RWC. Fitted 2m/70cm/6m modules. Yaesu desk mic +speaker 767. Boxes all manuals mint. £1600 or exchange hf linear or BBC B with discs and cash adj. I will haggle so please call Nick, G4WKO, 0793-871269, 0836-721534 anytime.

SILENT KEY ex-COAVA. All gmo. 2 Heathkit 58401 1xs with spare 61468s at £150ea. S8200 linear, £250.

5B650 freq/counter 30MHz E60. 5B610 monitorscope, E50. PH2000 hf wattmeter, E40. LP 111ter, E10. Ham K m rator with controller E80. Preler to sell complete station E60. Tel: Keith, G8HJZ, 051-677-4670.

YAESU FRG7 NO MODS E120. A11000 atu E50. Eddystone 730/4 working but needs attention; telegraph type 43 oscilloscope also valves and other spares for scope and 730/4; David Marsh, Tel: 01-210-6364 (day), 01-699-4874 (evenings/weekends).

YAESU FR101D receiver E160. FR7700 tuner, E40. YH55 phones E15. SP901 speaker E30. Boxed, ex condx. Contact RS85809 (Bournemouth). Tel: 0202-872085 (evenings please).

FT107H INTERNAL PSU, E450. HM 432MHz, 100w 111ter E100. MM 70MHz, 100w 111ter E50. Tr10 TH41 432MHz handheld, c/s/case, spare n/c, external battery case, E100. Tr10 JR599C5 rx E70. Davtrend 13.5v 24e psu, E50. G4BPY, OTHR. Tel: Walsell 413193.

TR10 TS830S WITH spare new G146S and 1287A, E750. G6AS, OTHR. Tel: 021-7063709.

RTTY STATION - all you need. Amstrad CPC464, green monitor, Scarab TU and program, all leads and manuals. Skycom RS232C interface for packet TNC. Heggling begins at E175. Tel: John, CW4KHH for sales pitch, 0978-820858, OTHR.

YAESU 480R. Superb as new condx. Complete, boxed, orig pkg & bracket. This 2m multimode has never been used mobile. With 12.5KHz steps. Must be the perfect starter. Contact Fred, G1OPZ, OTHR Somerset. Price E300 collect. Tel: 037-387-483.

FT101Z0 FM WARC cw/111ter, fan, desk mic, manual with FC902 atu. Ex condx, E595 no ollers. 70-100 monitorscope E80. H5-HF5 5-band vert/ant with ground planes, E75. Stermaster memory keyer E70. G4YDA, OTHR. Tel: liketshall 474.

TH3 JUNIOR TRIBANO E150. 60lt lattice tower/on trailer, E600. Epson FX80 NLO printer E300, as new boxed. Apple II disc drive, E50. Oalwa atu 2.5kh allband E220. Dalm 940-RM infrared mic E75. Oalwa active filter AF306 E40. Tel: 0925-64075.

NO MORE PLANNING PROBLEMS. Traller mounted fully galvanised 4-section versatower. Special model, auto winches, recent manufacture E1700. Traller mounted versatower 3-section 60lt auto winches, screw jacks E575. 1B3 Mk2 clean condx E150. IC701, IC701PS desk mic, RH3 controller (suit other lcoms). Would split E450. FT101E cw 111ter inc 10MHz little used, E315. Heath auto wattmeter AW-1X E20. Grundig satellite ssb adaptor E20. Pye sw rx 1930s vintage 1/med 75M bands 105.250v E50. 12v DC psu suit SB101, KW2000 etc. E40. Auto transformers 220-110v 1kw E100. Large selection Pye vhf gear components, alloy tubing, rotators, etc. WANTED: 20a min stabilised 13.8v psu, Drake MK2700 atu or similar. Contact Jim, G438QA for more details, OTHR. Tel: 0620-2519 (answering machine).

YAESU FT709R c/w homebrew charger, E180. Acorn Teletext adaptor suit BBC 8 E50. D/5 40-track disc drive one third height, E40. Vlgan console unit suit BBC 8 E30. G4SKH. Tel: (Hull) 0482-647595.

HINIBEAM H01 good condx E1000. G1436 scope needs attention E15. FT290R (280: Psu 0-15v 500MA E15. Harcan roller coaster c/w counter E35. All crge extra. Tel: Martin Willis, G3Z25 (Plymouth) 707550 OTHR.

CW NARROW FILTER for FT101Z, FT901, FT107, FT707. XFB, 9HC now boxed. E35 inc postage. G4GIV, not OTHR. Tel: 0482-848958.

IC2E HANDIE 240v and 110v chargers, E135. Yaesu FT703R 70cm handle and charger E150. Both boxed with manuals. 10m 100w mains 111ter E80. Icom 10m 1m E30. C4XRU, OTHR. Tel: 0903-690415.

YAESU FT747GX +fm mic imac E570, carriage inc. BN05 12/20E heavy duty PSU E109 cern inc. CAPCO 300 atu imac E180. Oalwa N5660P swr/pep meter E98. Allinca ALR-22E 138-174MHz rx/tx swr magmount 1/4 whip antenna E220, imac. John, C4YDM. 091-4162606.

MAST 32FT HIGH 8 Interlocking 4ft heavy gauge aluminium tubes, c/w guys, pickets and baseplate in original box, good condx, suit field days or base station. Buyer collects. E45. G3UVE. Tel: (Bexhill) 0424-215993.

TR10 R2000 RECEIVER with fitted vhf unit, manual, little used, as new, E350. RS85986. Tel: (Leicester) 0533-782711 (after 6pm).

KENPRO KRS00 ELEVATION rotator with boom and control cable, E80. Met 70cm 17-ele crossed-jay-beam 5-ele crossed 2m E15ea. All vgc. 70cm polyphaser new unused E45. C4KKY. Tel: (Huddersfield) 0484-862773.

FT290R, N1C405, CHARGER, rubber/duck, ant. r/mount soft/case, Allinca 30w amp E300. AppleII computer, 3x5" d/dr. Hitachi 12" monitor, Data Systems printer +disc data base E2200. Yamaha 44-key electronic organ, (PC1001) 35w amp and books, E100. Peter, G3UXH, OTHR. 0634-250562.

36lt LATTICE TOWER 3-sections, head-unit, rotator bearing, E190. Jaybeam T83 10-15-20m tribender, E175. Heavy duty Dalm retator complete E65. All items 2-yrs old with sell lot for E400, G4YD, not OTHR. Please Tel: 061-724-4218 (anytime).

TENTEC ARGOSY c/w filters, Electret mic 99% cw only E325. vgc. or exchange for Argonaut 515, must be mint condx. Bob, G0FTD, OTHR. Tel: 0204-657410 (evenings).

SCANMER ADR 800E brand new August. For spec see Carfax ad. Still boxed with all accs. E165. G4N2V, OTHR. Tel: (Birmingham) 021-427-1788.

ICOM IC2E HANDHELD plus speaker/mic, 12v DC adaptor, spare n/c. Very good condx, E130. G3SAO, tel: 061-652-6529.

EXCHANGE MY "STANDARD" 70cm 1m G2800 for a good quality wide range scanner. Tel: 051-639-5922.

YAESU FC757AT auto atu as new, boxed, manual, cost E350 accept first offer of E250 buyer collects or pays carriage. G4TUL, OTHR. Tel: 0495-791894.

TELEREADER CWR880. cw/bead/oscillator, lcd display, c/w orig manual and packing, E195. G4NUR, OTHR. Tel: Halifax 46486 (evenings).

12V TO 230V 50MHz inverter, up to 200VA, runs computers etc. Iron car battery, E80. Also ASR33/V Genie setup, ollers? Andy, G8NPF, OTHR. Tel: 06845-67030.

TR10 1R2300 VHF TCVR complete not working, spares or repair. Quantity of 4CX350A valves, some unused. Reseal vhl multimode tcvr or good general coverage rcvr. Ollers, John 0248-714655 (evenings/weekends). G43VVC, OTHR.

DIP METER (NEW) E25. N type coax relays 1kw E25. Blocking caps 500PF 20Kv E3ea. 8x400v electrolytics on board 3200v E20. Full wave rectifier board, 3000v AT last E15. Low noise 240v lens, f6ee. G4SGV, OTHR. Redditch 45304 (Worce).

GENUINE R5GB CAR BADGE E10. "Amateur Wireless" Sept 22 1928 E3. "Wireless Magazine" July 1928 E3. "Geophone" knife switch s/p c/e in orig box E6. "Igranite" 75 basket wound plug-in coil 200-1000 E6. Morse key (1915) type SC HF F18 E8. "Vishay" decade resistance unit, in box, 1-99.999KHz E20. Service manuals: CR888 (updated AR880) E6, BC221H, BC221AC E5. AR77, AR77E, E5. MC86 E5. S04, S56, E3 R107 E5. CR100 plastic instructions panel (fits in 11d) E4. BC221J calibration book serial 550 E5. EFC Owen. Tel: Cheltenham 35235 (weekday evenings)

COMMUNICATIONS RECEIVER TR10 R1000 speaker FR7-7700 antenna tuner, E230. Avo meter model 8 HKV E80. Buyer collects CWCNCB, not OTHR. Tel: 0685-70995 (after 7.30pm).

BBC B COMPUTER ISSUE 7, view, viewsheet, database wordwise, and some tape software, E735. Reuters high resolution colour monitor, uncessed analogue and TTL input E30. Icom IC402 mint condx, fully xtalised, boxed, manual, E200. C41YA, OTHR. Tel: Sittingbourne 21207 (evenings).

HF LINEAR 2X813 G/Crid beautifully made, ht is 0-5k via 10a varicap, long life to valves, spare 813 set E475. Racei 17, in case +manual, revalved E140. No idlers or timewasters please. G4ILR, OTHR. Chris, tel: Cromer 761612.

YAESU FT101Z0 EXCELLENT condx top bend to ten metres, am board fitted, E390. Orig pkg. Tandy 64k colour computer and manual, E35. Tandy DMP105 printer/parallel or serial interface, E90 (manual) Will deliver 25 miles Bristol. G4UCH, OTHR. Tel: 0272-833296.

CAPCO ATU COMPONENTS. Two variable capacitors and roller coaster inductor with circuit diagram to make 1kw atu all new, E35. Codar CR70A rx, E40. Revax 2-way antenna switch new, E15. Jaybeam 2M halo aerial, new E5. G0IFP. Tel: 051-648-2492.

KENWOOD 4305 with instruction and service manuals. All filters and fm board fitted, E6250. Kenwood AT230 antenna tuner E1450. All in perfect working order. C0CDD, Tel: 01-958-1166.

DX-OTH JAPAN ON 100w and quarter wave vertical, two acres. Detached bungalow, three bedrooms. 1979 D/G solid c/h. Outbuildings, OFF for 4-bedroom bungalow. FPP ten acres site residential. Stairwedge Crot, Stromness, details 0856 2216, C4HPY contents? Make an offer.

IC211E 2M MULTIMODE Plus 1C RM3 remote controller, E350. Microwave Modules 2m/70cm tsivr E85. Sony

video recorder SL F1-UB. Sony HUC4000P camera. Tripod, 3xbatteries, charger, E500. Pristine condx. Manuals/boxed. Bill Wild, G3KSW, OTHR. Tel: 0992-23452.

TR10 15530 SP - unused 8 months since bought new. No m/c. In orig pkg with handbook, E600. Buyer collects. RS90877, John, 27 Belton Way, Herwich, Essex, CO12 4UP.

YAESU 9600 FOR SALE. Approx 2 years old, mint condx, open to ollers. Tel: 02912-3900.

FT290R MOIEK front end boxed, vgc E240. Sony colour camera HVC2000 psu, case, E150. Icom ICR70 rx+lm, boxed, vgc, E400. 2m setoffite dish. (Buyer collects) E45. Sinclair 128k computer, vgc, E75. 24cm AIV ant J-beam, E20. G1NVV, OTHR. Tel: 0582-668648.

STANDARD G7800 70CM mobile base station tcvr, 10w/1w 1m with mobile bracket, manual and in orig pkg, hardly ever used, E180 or exchange for FRG7 comm receiver or other hi equipment or WHY? Ring Mike, G0115 after 6pm, 01-304-9197.

MULTIMODE COBRAS. 148-CIL OX, fully modified, 26.515/28.495, E1500vno. 150CGL standard, 26.625/27.855, E1200vno. Both excellent condx. Both suitable 10m conversion. Reason for sale - "GO" call sign imminent. Howard, POBox 4, Port Erin, Isle of Man, RS84881.

YAESU FT707, FC707, FP707, boxed, manuals, fm board, Shure 526T mike, E5000. Kenwood LF30A 111ter E20. 10m 5-ele Yagi beam E50. 2m leopole antenna E35. Kenpro KR600RC rotator E125. G0CIV, Andy, tel: 0959-62276. All must go, going abroad soon.

YAESU FL2100Z LINEAR. Two brand new valves, unused, plus one spare valve, E6500. Somerkamp TS208 2-metre 45w 1m tcvr. E1150. Lightweight tower in 3x10ft sections, plus Crown unit, E3000. G4OFR, OTHR. Tel: 0752-880794 (Plymouth).

FR101 RX, 600Hz MFJ 111ters, werc. FL101 tx. Spare valves, both new owner, orig boxes. Tr10 2200 CX tcvr, RD-R7, 520-523. Oatong audio filter. Oatong universal r1 clipper. 8BC "MB" micro discdrive. Ollers. Chris Page, C4BUE, OTHR. Tel: 0903-814594 (weekends).

YAESU FT1290 INCLUDING 2.2AH n/cds, charger, case, muTak L01 E260. Somerkamp Yeesu FT780 inc case, n/cds, E270. All boxed and mint condx. C6Y1W, OTHR. Tel: (Stoke on Trent) 0782-321131.

FT767GX. 70cm/2m/6m board, desk mic, 12 months old, E1500. Contact G1SPZ, tel: 0707-372575 (between 6-7pm evenings, or anytime weekends).

RTTY TU BASED ON G3LIV PCB plus Toni Tune, beautifully made in matching slimline varcoses with choice of BBC software and documentation. ST5 TU, uncompleted project, including many enhancements and documentation. Immaculate Yeesu NC3 handheld base unit/charger. Oelwe cordless IR mobile mic with extra pickup heads. Solidisk new style 128k swr with software. Nightingale autodial modem with BBC software and manuals. Uncessed 8-inch NEC floppy discdrive, working but no info. G3TJP, OTHR. Tel: 0782-717123.

YAESU FT77 TCVR all options, mint condx, E425. Kenwood AT230 atu new May, ollers. SMC 25/35a psu new May, ollers. Kenwood KW LPF E25. Node Tushin swr/pwr meter hi/vhl rms/pep 20/200w E35. 100w dum/load E25. C4WRUP. Tel: 0286-5264.

FL2100 LINEAR WELL used but good condx, E300. Homebrew linear built to professional standards pair 813s c/w separate power/supply +spare pair 813s, E250. CWR670E telereader c/w monitor E225. Oalwa CNA1001 automatic atu E75. Capco SPC300 atu E125. Sharp H280K computer c/w Epson MX801t printer and box full of programs, literature, interface devices etc E100. 2m polarphaser unused in orig pkg E35. Would prefer prospective buyers inspect/collect but am prepared to discuss delivery etc. G4CCK, OTHR. Tel: (Cerrislie) 0228-26502.

TR10 TR9130 2M multimode with handbook and Heatherlite mobile mic, E330. G0CCH, OTHR.

YAESU FT767GX orig pkg. MH1 mic and manual. As new, 18 months old. E1100. G4OCNI, OTHR. Tel: (Kinross) 0577-64050.

RACAL RA117 HF RX, RA121 ssb/lsb adaptor and RA137 LF adaptor, with handbooks +interconnect leads. All in good condx E300, or would consider straight swap for Racal MA1720 drive unit. G8CAN, OTHR. Tel: Wokingham 781782.

TR10 KENWOOD TH41E 70CHS FM handheld trans. Mint boxed, E1500. Tr10 TS120V HF trans, VF0120, PS120, SP120, vgc, E390. WANTED: Heath HW101 HF trans must be vgc. Tel: (Weymouth) 0305-813202 or 773240.

QUANTITY OF RADCOM end shortwave mags HRO spers,

colls, switches, etc., also Eddystone "S" meter and mounting blocks. Exchange for non working AR880 or WHY? or sell separately. M Cleaver, Tel: Harmich 502195.

HOWES CIU25 assembled new antenna matching unit, cost free £30. GORWA, 3 Elmsted Road, Canford Cliffs, Poole, Dorset. Tel: 0202-709897.

YAESU FRC8800 gen coverage rx. Mint condx. Boxed, manual, limited use. Reason for sale, just licenced. Bargain, £400ono or exchange HF 15130 etc or WHY? Tel: (Cwynedd) 0758-740171.

YAESU FI101EE as new condx. Spare valves. Exchange for dual band handle or cash offer. G3XBP, QTHR. Tel: 06284-3186.

KENWOOD 4305 WITH instruction and service manuals. All 111ters and in board fitted, £625ono. Kenwood AT230 antenna tuner, £145ono. All in perfect working order. GOCDO. Tel: 01-958-1166.

COMPLETE RECORD COLLECTION must get Fantastic variety - something for everyone - popular, classical, synthesiser etc. All LPs in unmarked orig condx. You will not find secondhand LPs ANYWHERE as good. Send LARGE size for a complete listing. G3NTA, QTHR.

KENWOOD 1M221ES 45W 2HR mobile, ex condx, £280. 2HR 432/144 transverter, £100. Bartg S15MC ready built beards end 11L board 12-0-12 trans, £30. Tel: GGFMP, 0706-818271.

HF 55B TRANSCEIVER, Yeesu FT10120 mint condx, unmarked cabinet, little use with 160m. Best offer over £400. Also Trio 1R7850 45w/15w 1m tcvr, scanning, mke etc, £195ono. GOFDV. Tel: 0582-606173 (anytime).

COMPLETE PACKET STATION. Trio 1R2300, Allinco 11ner, Pac-comm TNC220 with 32k ram, BBC "B" with 401 discdrive, AMRAC rom, Sanyo HI-res vdu, Microline 82A printer, £490. Connections CX2450 satellite television receiver with SPC LNB, £150. Tel: (Chelmsford) 0245-400825. C4QCL, QTHR.

SHARP HZ80K COMPUTER, c/w interface, dual/disc drive, P3 primer. All in orig pkg and ex condx. Software, manuals, discs, covers, tapes, etc. £250. Also 2nd HZ80k with Centronics interface, tapes and manual, £100ono. G3VC, QTHR. Tel: 061-796-8737 (day), 0706-56660 (evenings).

QTH AVAILABLE SOON. Larger type semi, comprising spacious hall, lounge, dining-room, fitted kitchen with pantry, spacious landing with access to roomy attic, two double + one single bedrooms, fitted bathroom, separate wc. Detached garage, gardens front and rear with patio area. Viewing essential to appreciate spaciousness. Situated in good residential area. Convenient for M/C (12km) and M4 motorways. 301k tower, rotatable beam, 250 ASL. Inverted V for 3.5-7megs. 2m verticle. Clear take all to all points. PRICE £58,000 inc carpets throughout. Tel: 0942-884185. G4EOT, QTHR.

ICOM 1200E 23CHS MOBILE/Baso rig. 10w out, mint, orig pkg, £460. Wood/Douglas 107ub GOLF 100Hz MBFR board (new), professionally made "ponny lead" £75. Microwave Modules HTV435 70cm AIV tx, £140. H80 ATV rx, £30. Tel: G4XHF, 0293-515201.

ICOM IC280E 144MHz fm tcvr, gwo, £100. Belcom 11ner-2 144MHz ssb with transmit fault, offers. C15FR, not QTHR. Ask for Julian. Tel: (Gravesend) 0474-567141.

15711E YHF MULTIMODE base station, good condx, £650ono. Tel: 0388-833841. G4SAL.

IC271E 2HR BASE HUIEK front-and, immac, £600. Capco SP300 1kw ety immac £180. Antenna - pair 19-ele 70cm tonnes - power splitter, £60. 18-ele/70cm j-beam £20. 8-ele crossed 2m £30. 8-ele/j-beam 2m £15. All good condx. GOCAT-GWMPD, QTHR. 0298-71585.

FY221R MULTIMODE FI11ED RX proamp end nine xtals. Mic. AC and DC supply leads. Hever mobilised. Hand/book, orig box. One previous owner. 1111s, vgc. £330. G3KTH, QTHR. Tel: Groltwich 74624.

REALISTIC PRO2001 SCANNER £90. Radio Amateurs Course £10. World Time Clock £10. Halber weather digitizer for BBC £50. Tel: 0903-724805.

ARGONAUT TCVR AND OTHER QRP equipment. Circuit Eddystone QCR10, buy or loan please (deposit). G2CYN, QTHR. Tel: (Bodlford) 711538.

YAESU FT77 HF TCVR 100w, good condx, inc mlc, hand book 500Hz cw filter fitted, £405. Kenwood TH20SE 2m handheld 5w, 8 months old, one owner, inc speaker mlc, belt clip, accessories, £200. G4EG1, QTHR. Tel: 061-439-3831.

1R10 TS4305 FITTED FM. Ex condx, £600. P5430 extra if required, buyer collects, £38K. Tel: 050-845-688 (North Suffolk).

TELEPRINTER, 111 CREED 2300, tape punch, tape reader, external telegraph supply, technical handbook. Microwave Modules 144MHz tsvr, instruction book, connecting leads. Delivery could possibly be arranged. Offers please to G4BYU, QTHR. Tel: 0592-262873.

RACAL RA17L +sldeband adapter £150. Drake SP94 broadcast bands (convertable with crystals) 500KHz ranges +noise blanker, £150. Baarcot 220 scanner 66MHz-450, 20-memories, £120. HBR tu +decoder +modulator 45/50/75 bend, £80. Tel: 0789-842286 (evenings).

YAESU FT480R 2M multimode tcvr c/w owners manual. Ex order, £285. 12" green monitor, cased, £35. G3RDC, QTHR. Tel: 01-455-8831.

YAESU FT767 CX with 2m tsrvtr fitted. Hardly used, brand new condx £1100 for quick sale. G4DOZ QTHR. Tel: 0902-752484.

PK232 AEA MULTIMODE data controller. Plus pc software. Both brand new, never used. Unexpected redundancy forcas sale. Bargain £200 +post. Contact G4HJC, QTHR. Tel: (Chilnorr, Oxen) 0844-51694 (anytime). Mr Small. Complete with all packaging, etc.

FT690R HK1 WITH Heveda amplifier £265. 3-ele boom 6m £15. FT790R £265. 30w linear amplifier, 432MHz, £90. Epsen FX-80 printer, £85. SUS-485 vertical 1/4 antenna 1er 70cm £15. All in good condx. Prafer buyer collect. G6NSF, QTHR. Tel: 0625-611942.

TS1305 HF 55B TCVR and Yeesu FC707 atw with dummy load, power meter, £350. Dave, GQHSK. Tel: (Hew Addington, Croyden, Surrey) 0689-42157.

FTV707 YAESU TSVTR 1or FT757GX, FT707, etc. 2m unit fitted. Boxed with manual and leads, £145. G4JLU, Oavid, QTHR. Tel: 01-954-9180.

CENTURY 22 50W HF CW only transceiver c/w matching psu and HFJ-9018 atu. £375ono or swap 1er TS130V 1n good condx. Maj Kemp (G4TMO), 4 Arm Wksps REME, BFPO 41. All letters answered, or phone 01049-5231 35266 (evenings).

OA1ONG 070 HORSE TUIOR with headphones, £35. Trio R1000 gen/cov rx 240v or 12v good condx, £220. 8HOS LMP-10-100 2m 11ner, ex condx, little used, £150. Buyers inspect/collect. GOKCF, QTHR as G1HXX Portsmouth. Tel: 0705-693960.

YAESU 575GX WITH Yeesu FC757 ant tuner multiband trap dipole, Yeesu mlc, £750 the lot. G001J, not QTHR. Tel: 01-920-3723 (day), 0206-852960 (evening).

AR880 GEN/COV RX. Needs attention (for alignment?) Complete with original manual, law spare valves, buyer collects. £40. GOCXX. Tel: (Leeds) 0532-537439.

KW2000A 160-10M 1CVR, manual, £150. FT401 60-10m tcvr, 560w, manual +new 6KDE5 £150. KN Vespa MK11 tx 160-10m manual, new pc £60. Eddystone EP14 rack mounting, 60MHz alignment panoramic scope, manual, £25. G4KUN, QTHR. Tel: 04243-5347.

AVANIEK PREAMP 2000-4500MHz, Integral mains psu. SMA connectors, professional equipment only £40. 2-elf 50mm blowers, 9cm diameter, 2500 RPM. Ideal volvo 11ner, £10ea. G6ELH, not QTHR. Tel: 061-224 2862 (ask for Christopher Walker, evenings only).

ICS FAX-1 WEATHER FAX system £180, save £100. BT Modem unused, £20. Alphatrionics CPN computer plus wp plus discdrive, £200. G3VCO, QTHR.

1ET MB235P 2-ELE TRIBAND beam antenna 11rst, £75. G4TMA, QTHR. Tel: (Poulton-le-Fylde, Blackpool) 0253-886389.

AEA PK6A WITH HF64A modem fitted new, MDLC software update, packet, antor, rtty, cw, £145. Ex-celerator +discdrive 1or 64 with GEOS version 1.3 £75. Callbooks loreign and US listings 1983, £8.50 pair. G31JL, QTHR. Tel: 01-749-1454.

SBC 8 COMPUTER, 1770 and rom/ram board; CM80 mono hires monitor; dual teac 80TKD/5 drives; KP810 NLO printer; many BBC books. Spectrum 48k w/microdrive V150000 modem; Recel V21/23 modem; QL 128K "AH" roms; Cybernet BETA2000. Call for details. G4IAC. 0272-425011.

ICOM R71E £630. Yeesu FT102 £630. Yeesu FV102DM £220. Yeesu FI101 £315. Hint, boxed, spares, manuals, h/b box. HMOFH, X81, G3WPO, 80MRX, 4-converter kits, RX80, HFJ40M ORPTX/RX, 12 psu-1a, key, blts, etc. £50 all. Tel: Pat (E1) 0502-22788 (office).

HARCOM HARINE HORSE KEY. Front and rear contacts; Ball race bearings. THE Rolis Royce of keys. Offers, C1424H, QTHR. Tel: 0265-848815.

FT107R TRANSVERTER gives multimode operation on 2m band. Currently used with FT102. Phone for details

G4URC. Tel: 0222-794190, E115.

FT480R WITH MM PREAMP and Welz swr/pwr meter. Package deal £375. 5-ele unused Yagi included. Preter buyer collects. G3OPR, not QTHR. Tel: (Hew Hiltan) 0425-615676.

KENPRO 70CM HANDHELD (IC4E clone) mner leult, £115. Sony AIR7 niceds, charger, excellent, £155. FRC7 MF rx usul mds, £125. Goodmans pocket 9-band rx £27. 13.8v/12a British supply £25. Buyers collect. G6IAH, QTHR. Tel: (Avon) 0761-53053, (evenings/weekends).

TR10 15130V WITH HIC and psu. Orig pkg, £350ono. Trio TH41E 70cm handheld £130ono. Both in perfect condx. G4YXR, QTHR. Tel: 0274-723101 (daytime), 0532-501496 (evenings).

RA17L C/W SPARE valves, manual, Immed £110. Epsen LX85/printer c/w sheetleader as new, £130. OIAELO 630 dalsymmel/printer clone c/w sheetleader, as new £100. Osborne Executive computer 60+10MBHD 280 based portable +masses prel software £400. All eno. G6PFR, QTHR. Tel: 06285-30245.

ICOM IC745 9-BANDS plus gen/cov rx merker, cw 111ter, more facilities than a TS440, as new, £740. Also Yeesu FTDX401 high power 5-bands as new, boxed, £195. G3NKO, QTHR. Tel: 0480-412789.

TS8305, SP230, AI230, VFO240, E1050. Like new. F1290 MK2. MaatharLite mlc, 6 months old, £350. CBH64 154100, plenty of good software, £250. All must go, need the money! Tel: 0386-832233.

23 HEW EARLY MONO CRTs. SAE 1or 11st. G311Y, QTHR. Tel: (Mr Bedler) 0234-720203.

YAESU MD18B 8-PIH dynamic desk mlc, switchad 600 or 50k ohm 1er all 8-pin Yeesu rigs. Boxed with instructions £50. 17-ele tennis net corroded, only used 1er contests, £25. G8VPE, QTHR. Tel: (Horn-10k) 049377-673.

BENCHER BST1 key new £50. Ex-WD 123 t/vr c/w accs, ants, key, earth rod, d/c, a/c volt-meter, some crystals in havarsack. Good wkg ordar, manual, £70. G35CH, Ashford, Kent, G21158. Selling key, tee old to leave the old up/downer.

158305 WITH 250HZ cw 111ter, £575. FT480R hardly used, £275. BBC-B Issue-7, ATPL board, twin 40T discdrives, microvitec colour monitor, data recorder, mouse, joysticks, wordwise+ Interword, stop+press, software, books, £500. G3VHW, QTHR. Tel: 0937-844510 (altar 6pm).

SIGNAL CORPS ATU BC306A. Radilusion wavemeter, 60SA/1 100KHz/43MHz coil set, calibration charts, book. Redlion R50M rcvr 13.5KHz, 32MHz Impressive features. PSU manual, spares, many spare valves. All beautifully engineered pro equipment. Ex condx, unmodified. Offers. G8TUM. Tel: 0695-74676 (evenings).

PYE WESTHINSTERS LOW BAND 1m ultabto 70MHz, £30. URF Westminster suitable 70cm £39. Pye alg/gen vhf £75, uhf, £75. Audio generator £15. Solartron 1400 15MHz dual beam scope, mint £125. Headphones £2. Shuro miko £10. G4YVJ, QTHR. Tel: (Lincs) 0507-85203.

POCKETPHONE PF2UB no crystals working, £40. Tok-tronix S49 storage scope, working, £70. Sinclair ZX-Spectrum +tape recorder £60. TR580 11w printer V11 not working, requires processor, £10. Digital multimeter micronta £20. Buyers must collect the equipment. G1JWW, QTHR. Glenrothes 757017.

YAESU FRC8800, HANDBOOK, orig box, £500. G6VFE, QTHR. Tel: 0922-682995.

FT757CX HIHT, BOXEO, manual, mlc, spare dc lead. £620ono. FC902 atu unmarked, manual, £100. 2m 10KY ant, £20. Steve, G4IHW. Tel: (Ely) 0353-661068 (anytime).

BBC ISSUE-7 WITH 00F5 (1770) solidisk. Philips amber monitor BH7522. Sanyo data recorder DR201. All in mint condx, inc view, wordwise plus, vlam-sheet, vlenstore, roms, user guides end dabhand utilities, all copies of BEE-BUG. £300. G3RCU. Tel: 0202-475048 (evenings).

YAESU FT301D HF 1CVR, 160-10m, 100w, solidstate, am/cw 111ters, 12v lead, £345. FP301 mains psu with speaker, £85. FC301 atu. (Twin swr meters) £115. Y3031 monitorscope £175. L3011 land1ner £25. All £725, offers. G4IRO, not-QTHR. Tel: (Horthampton) 0604-44341.

TOP BAND MOBILE 55B TCVR G4ENA typa. 10w output. Fully built, £150. G3H4Z, QTHR. Tel: (Luton) 0582-591749.

BLACK AND WHITE MONITOR £10. Two Alced 12w nickel cadmium batteries, 32AH, £15ea. 12v winch 750LB pull with reverse switch, £80. Ideal for mast. Tel: 095389-8376.

YAESU FT709R, NEW, BOXED, £170. STSNC termi-1

unit, racalvcs ok but needs attention on tx. 01r10ers FRG7700 memories, ex condx £300. 1com 1050 converted to 10m 1n £40. GIMPC, not OTHR. Tel: 044-223-3222 (day), or 0525-373147 (answcr-phonc).

SCOPE KENWOOD CS1021. Dual trace 20MHz, as new £280. CW4HBZ. Tel: 074-571-2777 (evenings).

1R10 15530S £500. Yaesu FT790R £250. 1com IC271E mutek 1/2. £575. Yaesu F1460R £275. BNOS 70cm 1linear LPM432.1.50 £150. All in mint condx. G6VEK, OTHR. Tel: 0526-73480 (weekends).

EOOYSTONE RECEIVER 730/4 1mac condx. Installation and operation instructions. Harvard stereo headphones 11 required. Spring 1987 Callbook and International Listings Callbook 1988, offers. Buyer collects. BRS90661. Tel: 01-397-2785.

KENWOOD TM401A 70CM MOBILE tcvr, c/w mobile mount, m/c +3X5/8 collinear b/stn aerial, £200. G4EMA 160m tcvr kit 99% complete (only pa transistor and tuning cap to fit) - supplied E65. GW3WSU, OTHR. Tel: 04468-261.

70CM K2R1W LINEAR £225. 1linear power supply £175. 2m 1linear single 4CX250 with integral psu £275. 13.8v 15a psu £35. Tel: Chris, G4CRF, not OTHR, Winslow 4888.

F122SRD, F111ED MUTEK F/E, £500ono. C40KB, OTHR. Tel: 0277-653561 (alter 6pm).

FT209R YAESU 2M HANOHLO with two FNB-3 nlcads, HC9C charger, PA3 car adaptor/charger, FBA-5 dry battery case, MH12A2B speaker/mic, sold case, £195 tha lot. Paul, G4XIA, OTHR. Tel: 09313-359.

YAESU F1757GX MK2 with m/c, and manual, boxed, vgc, £675ono. Yaesu F1290R MK2 with nlcads, Yaesu 25w clip-on 1linear, case, mobile mount, m/c, plus mobile scan m/c, boxed with manual, vgc, £375ono or exchange Standard C500. Brian, G4ICN, OTHR. 01-897-3794.

VALVES FOR SALE OVER 100 EG EFSO, ECC82, 6SNY, 6AW6A, EL95, SR4GY, 6x4 etc. Some new some s/h SAE for lists. Also 2m 6-elo j-beam antenna £10 brand new. C30ML, OTHR. 01-540-2713.

TR10 TSS305. ALL BANOS. Matching remota vfo. Narrow 11ltars. Spare valves. Pralar buyer collects. £560ono. G0EGR, OTHR. Tel: Bournemouth 302698.

ICOM 271A PREAMP SPEECH synthesizer £500. Yaesu 290R nlcads, charger, mobile mount, 11oxy 1/4 wave £250. Daiwa 0K210 Electronic keyer £40. Oatong 070 mersa tutor £30. All in good condx. C0BT1, OTHR. Tel: 0843-601284.

HYGAIN R1530 SEH1 professional h1 revr 1.5-30MHz £295. Radfon antenna distribution amp six outputs from one antenna, £55. AEA cw/rtyr tutor, £50. Sony 76000 portable h1 revr £125. HP 41CV calculator with magnetic card reader plus cards, c/w pu's and manuals, bargain £125. 4-Pye PF1's with batteries and charger, £25. 11-mac £3.50. Large frame with separate bedrooms +all 11ltings, £175. Atlas M11 mobile antenna transformer £6. Buyer inspects/collects. Lawrence, 0935-813097.

DRAKE "C"line R4C 11ttad 2.4/1.5/500 filters, extra wrc bands, passband-notch M34 matching speaker. 14XC tx, with AC4 power/supply. All in mint condx, £700. Trlo 157005 multimode. Ideal base station. Many extra crystals, £395. G4LW, OTHR. Tel: (Trowbridge) 0225-753166.

2 HEIRE TRANSVERTER "EUROPA", spare PA, manual, leads, £45. Ex-club 0/F "Fox-hunt" transmitter, built-in 12vPP, key +atu, £20ono. Professional RAF type"D" morse key, platinum(?) contacts, cover, £30ono. type 2633 key E7. type 702 key, £2. (all solid brass). 00V06/40+00V03/20 twin-tetrodes (both 11ttad £28+)£5ea. 1CP1 1" CRT £5. Carriage extra. G3AEP, OTHR. Tel: 0253-720756 (anytmo).

DRAKE TR7A C/W 3 11ltars end EA7, PS7, c/w FA7, RV7, MS7, MN75 c/w Balun, Shure 201, boxes, manuals, spares £1200. Dressler D2005 vhf 1linear £450. Oatong HK morse keyboard c/w psu £50. All 1mac. G4JBH, OTHR. Tel: 0935-824225.

LINEAR 2M MH144/200S, 3/10/25w input, 200w output. As new, £260. Yaesu FT208R 2m h/h 2-sects nlcads, mobile psu, boom mic, £160. Hoves CTU30 etu £16. AP3 speech proc £8. 70cm mobile whlp tree. G3MEW, OTHR. Tel: (Portsmouth) 0705-820315.

TR10 158305. Parlect condx, fitted YK88C and YG455C cw filters. £700. G4MTA, OTHR. Tel: 0235-27128.

YAESU FT209RH, c/w FNB4 high output nlcad, aerial charger, manual, case. In orig box. Beautiful condx, £195. He offers. WANTED: 2m 1linear with pro amp for base station. Tel: 021-384-1822.

KOK2075E 2H FM MOBILE TCVR 5w/25w output, 10-programmable memories with memory/band scan and

repeater all-set, 12.5k/25k channel spacing, automatic repeater tone. Full working order, good condx, £150. G3YWO, OTHR. Tel: 078833-642 (after 7pm).

AL100H 65FT LATTICE mast, 6-sections. As new, needs ground post. Daiwa rotator and control unit. 2m 6-elo quad beam. 70cm 48-elo beam. 70cm vertical collinear. All cables etc. Will split, £875ono C4UDW, OTHR. Tel: Tunbridge Wells 46494.

IC251E WITH MUTEK FRONT end, vgc, £450. TM201A mobile tcvr as new, £225. Daiwa NS650P swr bridge £70. Rtty t/u plus tan-tune and books, £100ono. C41NL, OTHR. Tel: (Cheltenham) 0242-38243.

FT980 HF 1CVR, M01 mic £900. FT726R 2m 70cm satellite, YH48 mic, £675. vgc. Would exchange for digital MJ-MX10 or Sony U-matic. PC-1251 Sharp computer with CE125 data recorder/printer. All programs for satellite predictions £80. IC2A 2m handheld, £80. SIC Prestel £70. Buyer must inspect/collect. Cash only, avorything as new. G31BT, OTHR. Tel: 042877-368 (6-9pm).

FT980 M0188 MIC, £1100. FL2100Z, £550. Daiwa semi-out 2kwatu £180. EF501 11lter £15. 1com 290H used base only £310. FT209H speaker/mic, YH2-headset, base charger, PA3/adaptor, W4z 2DB-ont £275. Walz SP15M meter £25. H1-mound 702-key £30. 2-Azdan speakers £6ea. Draa wavemeter £12. Draa 2m ant switch £10. J-beam 8-alo crossed yagl £20. H/09508 rotator £45. HY-gain TH3JNR, balun, £100. Sagent EL40X 3.5/7MHz ant £20. G4XJ1, OTHR. Tel: 0527-25928.

YAESU FT290R MOBILE MOUNT with 25w amplifier, sold case, nlcads, and charger. £275. G3WPB (Paul), OTHR. Tel: (Bournemouth) 020-894546.

YAESU FRG7700 RECEIVER, FR12700 etu, FRV7700 118-130, 140-150, 70-80 converter manuals and boxes, £300. G3WPB, (Paul), OTHR. Tel: (Bournemouth) 0202-894546.

ICOM IC730 HF RIG with 12v psu virtually unused, and honca 1maculate condx. £425. G3WPB, (Paul), OTHR. Tel: (Bournemouth) 0202-894546.

ICOM IC471E 25W 70CM multimode base station. Very 11tla use. £485. G60KB, OTHR. Tel: (Ramsgate) 0843-821260.

THREE PYE VANGUARD HIGH band am 12v, unmod11lad and believed lully serviceable. Buyer collects. Offers, G3BXC, OTHR. Tel: 02216-6394.

FT707 100W 12V HF mobile tx/rx. 8-band ssb/cw/am vgc, £320. Buyer collects. Tel: 0422-844122 (evenings). West Yorks. C4XNF, not OTHR.

KW2000b +PSU, manual £180. HFV5 5-band vort £40. Grundig satellite 2100 +ssb unit h1 rx +1m, £90. Oatong auto speech proc £50. G4XIE, OTHR. Tel: (St Malens) 0744-35951.

YAESU FT767GX WITH 266 meters, modules and Withers mod 11ttad, £1450. 18AVT vertical £100. Butternut HF6VX vertical £110. 3-elo 6m beam, £25. 2m collinear £15. All 11rst class condx. Call K-Baker, C4RPV, OTHR. Tel: 021-459-7041 (alter 6.30pm).

MARCONI CR100 RX complete but not working. Requires rewiring £25ono. Ray, G3WZR, OTHR. Tel: 0483-575820.

158305 with box, book and DC/DC option, vgc, £699. Tel: (Stallordshire) 0283-840667.

YAESU F1290R mutek front and, nlcads, charger and sold case. Boxed end in mint condx. £220. G0BYE, OTHR, Swindon, Wilts. Tel: 0793-28471.

R71E ICOM. One year old, mint condx, fitted 1m all documents, manual diagrams, Invelca, dust cover, orig pkg. Few hours use, £600. Must be seen. GW810C, OTHR. Tel: 0633-894708 (after 6pm). Gwont.

TR10 9000 2M multimode, good condx, mobile brackets, £260. Tel: 0302-859451.

DAIWA LINEAR 2m LA2065R 10w in 20w out, rx amp. £80. Codemaster cw/rtyr cwr £10E £70. Both vgc. G6B8P/OTHR. Tel: 0284-754649.

YAESU FT726R 2m 70cm +satellite board, MH144/100 and MH1322/50 1linears. 2m swr meter, all boxes, manuals, 2m10EX yagl 70cm 91 helical +Azimuth elevation gear. £1000. Yaesu FT757GX, FC757A1, FP757H0 as new, boxes, and manuals. £1000. Tel: John, G4QCY1, 05512-3573.

TS430 TX/RX 1yr old, fitted with fm board and all optional 11ltars. Never used on transmit. £795. C8WYT, OTHR. Tel: Peter, 0444-850265 (Sussex).

TR10 TS7005 digital 2m allmode transceiver. Little used 1mac, plus j-beam 10-elo cross phased antenna, £250. Tel: 0923-776888.

FT1012D MK3 FM £475, 901R 2m Tsvtr £150. FV101 OM external vfo £125. FC707 etu 10-160m £100. Kenpro KR400 RC rotator £100. All boxed. CIUAX. Tel: Hatfield, Herts, 65025.

COLLINS S LINE (Rockwell 1976) comprising: KWM2 A, 516F2 AG/psu/1s, 312B5 remote vfo/1s/wattmeter. 5M2 desk mic, xials for additional bands, PM2 AC psu and operating/service manuals. Many spares inc components, valves, relays, VFO modulo etc. G3ONU, OTHR. Tel: 0923-676344.

EXCHANGE ICOM 720A h1 o11 band all mode gen/cov tcvr, with PS20 psu with extension speaker, also EC700 atu as new condx. All boxed. Also Belcom LS102L 10m multimode, 10w output, vgc, boxed. Also MM rtyr to TV converter, vgc. Exchange all o1 above for Yaesu FT1 tcvr. Tel: (Stalham) 0692-82075 (daytime).

HEATH HW101 vgc, 600Hz 11lter with handbeek +some spares, £225. FRG7+OFM £110. J-beam VR3 with radials 10-15-20 £40. All plus delivery or can deliver reasonable radius of Hull. Tel: (Hull) 0482-500648 (evenings).

LINEAR GMC1MACH £12. Sanwa multimeter, new, £12. MC425 omc, new, £12. Yaesu FRB757 relay box £8. Astrolite headphones, £5. Tel: 0740-51938 (evenings).

SALE/EXCHANGE. 1com 720A £495. Hansen ESS00H PEP/swr £70. HFJ 901B etu £50. or ex for FT726(2) Trlo TS711, 1com 271. GIUIY, not OTHR. Tel: 0474-328163.

FIBREGLOSS SPREADERS 13lt tapered 8 alf to make 3-band 14.21.28MHz quad ant. £40. G3HVC, OTHR. Tel: (Wobley) 0544-318412.

YAESU FT980. Parlect condx. Internal keyer unit 11ttad. £100ono ne time mostars please. Buyer collects or arranges collection alter cheque is cleared. G3KUE, OTHR. Tel: 027581-3648.

YAESU FT790R UHF multi, mint condx, (nlcads, charger, case, boxed as new) £300. Pye Olympic 12-ch 1m converted 4m with 4-ch (mic and speaker) £70. Tristar 747-cb multimode converted 10m 28.110-29.700 £80. G00NS, OTHR. Tel: 0474-357795.

TR10 TSS20 h1/ssb tcvr with dc-dc now pa valves cw 11lter +Kenwood S20 remota vfo and manual £375 ono. Contact Clyn, GWOEW, not OTHR. Tel: (Oasido) 0244-816434 (evenings preclarrd).

YAESU FT902DH h1 all mode tcvr. Oatong databasa 32k rom for BBC, slats into board. Full instructions. WANTED: Smiths chart on 40-80 disc. Also colour monitor or any interesting programmes. Tel: Scarisbrick.880345.

TR10 TR2300 CASE, nlcads, carry strap, r/duck + telescopic antenna rax/optr mod. vgc. £110. Also M/Modules 1linear amp MH144/30LS 1-3w input, 30w output, switchable praamp. Hardly used, 60d. Ideal with TR2300. Mr SR Davies, C1HR1, OTHR. Tel: 061-494-2729 (after 6pm).

TR10 KENWOOD 1CVR TS4305 with psu PS430 and hand mic HC305. Unmarked, orig pkg, all instructions, £675. Prefar buyer collects or carriage extra. G3GVV, OTHR. Tel: (Tonbridge) 0732-353360.

PORTABLE SCANNER am/fm monitor revr. PRO32. vhl 68-88, 108-136, 138-174MHz. vhl 380-512MHz. Cost £250, unused, orig pkg. £160. G4RNE, OTHR. Tel: (Southport) 0704-77508 (alter 6pm).

LINEAR AMP MH144/100-LS 100w output. Brand new, £100 or ex for 70cm 1linear. G1YB. Tel: 0468-61567 Oysterber Farm, Low Bentham, Lancaster, LA2 7ET.

YAESU FR101 RCVR 160-10m +2m, 4m. 1m board, cw 11lter, manual, £150. Collect only (no carton). 1com IC24C 2m 1m mobile £100 inc carriage. *Serial 8056" thermal printer RS232 w/manual £45. G4JOJ, (Nigel), not OTHR. Tel: 0477-33589 (Cheshire).

ICOM IC02E 2M handheld. Mint condx, boxed. Also charger and MH 1linear. Offers around £200 for lot (rig used for one transmission only). G16PYP, OTHR. Tel: 0365-24163.

ITT 2300/8 dataprinter with workshop manual, 1n wkg order. Buyer collects £25. Tony, G1TXG. Tel: (Croylerd) 0322-525792.

JANDY MODEL 100/102/200 disc video Interlece 40/80 column x25 line, outputs for r1/video. Takas 5.25" discs, £100. G4UVJ, OTHR. Tel: 0268-697978.

TR10 R600 RX. Pristine condx. One of the last o1 this model to be produced. All orig pkg, etc £220. Tel: Liskeard 46360.

VIDEO-GENIE EG3003 computer. orig pkg, books, games, amateur radio software inc checklog, cw, rtyr, £45ono. AVO model-71 (with leads). Fully working, £10. WANTED: 432MHz xverter with 144MHz 1F. G3ZVM, OTHR. Tel: 01-882-5125 (evenings/week-

IF. C3ZVW, QTHR. Tel: 01-882-5125 (evenings/week-ends), 01-324-7340 (days).

DRAE 24A POWER SUPPLY. As good as new, boxed etc. £99 plus post. C4PPR, QTHR. Tel: (Shellfield) 0742-372540.

SPECTRUM ANALYSER 10.4200MHz Tektronix 1L70 c/w mainframe +manual, £600. No offers. Wavetack 1001A sweep/cw generator. 0-300MHz. £150. 3kw hi linear 4-1000A in CC-Class A. B2 tuned input, 2kw output +spare new tube. Complete E950. C4H5B, QTHR. Tel: 0642-816608 (after 6pm).

MH1144/28R +Manual boxed. £125. Datong auto notch filter, as new. E50. C08CY, QTHR. Tel: 01-949-5549

S15C RTTY TERMINAL unit 13.8v E70. Ton! Tuna rty tuning device. £60. Sinclair Spectrum+ with Interlace 1. +1 microdrive and 8-cartridges +alphacom 32 printer £160. C410E rtyty-8 rtyty program with Spectrum Interlace E30. C410E lax program with Spectrum Interlace E15. Hilmound semi-auto morse key single paddle. £15. C3U02, QTHR. Tel: 021-373-8806.

SHIMIZU 55105S T0-80m covr with fm units E230. Yaesu FT290R 2m tavr with nlcads and mobile mount E250. 2m 25w linear amp to suit above from Clirkit kit E35. Eddystone EC10 Mk2 rx E60. Ex-ministry Mk123 "clandestine" tx/rx E50. Bancher paddler black base immac E40. Two 500pf wide-spread variable naps and roller coaster inductor Ideal Hi-power atn E50. Pair 4CX type bases and blower E15. Near offers accepted. G4KPI, QTHR. Tel: 0249-654235 (evenings), 0836-249185 or 0452-507433 (daytime).

KENWOOD TS430 with matching PS430 power supply, unmarked and boxed with manual, plus MC50 mic, £750. C4J00. Tel: 0553-811275

PYE WESTMINSTERS low band 1m suitable 70MHz £30. uhf £39. Pye psu £15. Pye S03V/SCSU whi/uhf signal generators £75ea. Advanco audio generator £15. Dual beam 15MHz scope E95. Many other items. Best gear components etc. C4YVJ (Lincs). Tel: 050785-203.

MICROWAVE MODULE. 2M 30W linear, MH144/30 boxed. Good condx. Ideal for your FT290 etc., £45. C4ZJT. Tel: (Hitchin) 0462-57687 (evenings).

HAM TX2325 compressor, m/c, tatty but gvo E10. Colonel em/ssb includes 29.365-29.805 but convertible for 27.985-29.700. NOT working, but repairable? E20. Carriage extra. Also have other rigs for conversion. G1YLP, QTHR. Tel: Cheltenham 680248.

SHACK CLEARANCE due to business pressures. HF Yaesu, vhf Yaesu, Icom, Trio uhl, Yaesu, Kanpro scanner, earials, coax components, and SAE for list. No reasonable offer refused. Hay consider p/ox. Call Mrstyn, G4SUI, QTHR. Tel: 0924-495916 (evenings/weekends).

UNI0EN BEARCAT 175XL base scanning rcvr, covering 66-512MHz, with 16-ch memory scan. Purchased March hence mint condx, guarantee £150. Oava, G1URQ, QTHR. Tel: 051-355-2373 ex-33 (work).

MYV435 70CM ATV TX. 20w PSP 2-video/1/p FORTOP 70cm/rx converter, £100. FT690 Mk2, FL6020 linear, nlcads, mint, £385. TS430 a/pau E75000. 4-meter PF262 1m h/h 1-channel litted. £45. Pye 6-chan uhl sig/gen requires attn. £15. Sinc/micro TV, spares, E10. 0782-46570.

KW2000E with AC psu, manual, £220. FT708R with case, nlcads, charger, car adaptor, mobile brkt, manual, £150. G3RXG. Tel: Wincobba 3562.

10a 13.8v psu, 8rem) BRS35 £20. 15a 13.8v psu, Ham International HS150, £25. Sell or exchange Summerkamp FT7670X (FT707) Inc. 2-power leads, 11st m/c, owners manual, w/shop manual, 4 spare crystals. Spares for fitting 160m for either E375 or 2m 25w Multimode base (Trio or Icom) C4XPP, QTHR.

FRC9600 with hf converter 3 months' old, E30000. MA151 world band rcvr 1w/em/sw/1m storen, £50000. Buyer inspects/collects. G4OVK. Tel: 021-747-7925.

DISCONE AE 50-500MHz, hardly used, no room at QTH. £15 plus post. John, G8NCH, QTHR. Tel: 083-82-304

FT290R MOBILE bracket, nlcads, bag etc £250. AR88 E40. Pye FET Lynx camaro manual E20. Tonna 70cm ATV antenna £25. Sharpe M280 +basic assem etc £40. G8UWJ, QTHR. Tel: 0332-881549.

FR8800 WITH VHF/UHF nonverter £500. Colng tx. QTH Leeds 755436 (after 1900h) G1YFR.

PYE LYNX TV camaro with lens, £30. Composite vidno monitors all work OK with BBC mixer. 9" b&w 12v uncased E10, 11" b&w mains uncased £15, 12" green screen cased E20. Postage E5. Chris, G4IXY. Tel: (Beguilly) 05477-273.

WANTED . . .

ANYONE GOT A SPARE BASIC program manual for 48k Spectrum, buy or borrow. My junk sale purchase did not include onal GOENR, QTHR. Tel: 02993-4701.

FT707 TCVR FC707 atu, FP707 power supply, FV707M ext vfo. Must be mint condx and not modified. Oca Smith, Ruislip G33118. G0JCF.

SSB GENERATOR 10.7MHz GAEAG. Part constructed, finished Omega covr project WHY? Consider individual Omega modules in kit or built form. Anything relevant to this project would be most welcome. Please ring 028883572.

EDDYSTONE 680X instruction manual. Service manual to copy or buy, please. C4YBP. P Darcy, 4 Fox Lane Elmhurst, Lichfield, Staffs. Tel: 0543-250963 (not QTHR).

TWO EIAC 3-500Z. C3UGL, QTHR. Tel: 0234-750050.

TYPE 123-128 TRANSCEIVER complete or WHY? Also any green synthesized vhf/uhf/rf manpack equipment Any country of origin. Tel: Brighton S08573. G4ZWD.

SERVICE MANUAL, circuit diagrams or any information for ITT HS star radio telephone (3-ch uhl fm) Also any 70cm conversion information for ITT HS. Contact Andy, C5REG, QTHR. Tel: 0604-48551.

COLLINS 31283 speaker or S16F2 psu (prel R/E) 1000PF vacuum verifiable 153BA 8877, 3-1000Z, bases. WHY? Tel: 0743-884858.

OSCILLOSCOPE, small general purpose scope, any make, ago, but must be working and complete. C4LJ QTHR. Tel: Oorham Market 383573.

ORAKE TR7A outfit, loto serial number. Preferably with cw filters. Must be in first class condx, and up to spec. Will consider late TR7 in beve condx. C3K0A, QTHR. Tel: 0305-832974.

A SOUND PROVEN bugs lrao, complete ORP cw rig for a newly liconed om. Please send complete details to JE Windbank, 39 Shoreham Close, Symonds Green, Stoveonway, SG1 2JF.

TR10 9RS90S gen/cov rx in good condx. G0ELX. Tel: 061-477-3912.

SET OF RADIALS TO suit Hokuishin H15 S-band tropop vortice. COHJH, QTHR. Tel: 0325-286657.

KW107 ATU. Any condx. Norman, C4RYS, QTHR. Tel: 0532-663846.

T1138 10D/11741 and TR9F 10D/11740 manual or copy required by Canedon Museum. They have equipment in mint condx but no info. Can anyone help? via G3BHT, QTHR. Tel: 021-308-4764.

RSGB MEMBER WISHES to buy RedCom mags pro-1981, also 70cm linear (10w drive, 50w-60w output). CH1XZ, QTHR, or Tel: 0674-76503.

IC240 WITH MOBILE mount wanted for RA18C member. Would exchange IC2E complete with charger and spare battery pack. C4H4D, QTHR. Tel: (Oxford) 0865-718430.

NEHS CLARKE VHF receiver and frequency extandar unit to 500MHz. Low mileage, Immac Graed 444 with reader and perforator. 19" rock cabinet about 3" high. Small front panel knobs for BRT400. Details and price please. Tel: (Whitby) 0947-601567.

40ft or 60ft LATTICE WIND up and tilt over tower. Mark. Tel: Newton-to-Willows S829 (Merseyside).

2H COLINEAR REQUIRED. Prefor GPVS. Reasonable distance from Burnham on Soa 781513. C1XWZ.

CIRCUIT DIAGRAM OF Barlow-Wadley XCR30 Mk11 rcvr. All replis acknowledged. Can photcopy. C4NPI, QTHR Radio Callbook.

FTDX401 in good condx with oil loads, accessories, etc. Hopefully in Anglian area. Alan G0HKG, QTHR. Tel: (Essex) 0875-3356.

AIR PUBLICATIONS (manuals) for R1475 AP2883G vols 2, parts 1+2, vol 3, vol 6. Also mounts type 656 100/17535 type 657 10a/17537. For tx T1509 any manual or circuit details. Also AP116E 0711-3 ACD. Tel: C4CCW, 01-651-1410.

VALVE HOLDERS 4X7 large version. Knapp G3NHJ, QTHR. Tel: 0424-215556.

IC2E HANDHELD MUST be in good working order, C3YOC, QTHR. Tel: 0278-424443 (after 6pm).

70CM 1NSVTR MODULE 1nr Yaesu FIV901R mainframe. Wood & Douglas 70cm 1m rcvr. COFAJ, QTHR. Tel: (Wymouth) 0305-789022.

FT101ZD MK3 WITH FAN 1m mike and manual. G3BZH, QTHR 1988 callbook. Tel: 0494-712733 (High Wycombe)

IC AT500 AUTO TUNER. SP7 speaker. FOR SALE: MHL432-100 linear, 6m 3-alc beam, F1757GX covr, FC757AT. Howard, COZH, Tel: 0394-460-474 (Sulloik).

HAMMARLUND SP600 casa only. Eddystone 770R Hk11 nose only. Control unit C for No.12 sender. WS19 bits plenes leads etc. R1475 psu. Swap Xerox word processor for radio gear. WHY? C4XMD, Jlm, Tel: (Kliddminster) 0562-823674.

WANTED: Collins KM2(A) or Collins 3253 or even Collins KWH380. I have available Collins 3251 75G1, KWH204 Eddystone 740, 840C. All carriage/insurance paid UK. Tel: 0229-89635 (anytime).

FT101ZD OR SIMILAR. Cash waiting for the right one at the right price. Phone 034-882-346, CW4UZL, QTHR.

WANTED WANTED ATARI nonputer S20ST programs for rtyt satellite decoding and any other amateur radio related software. Astronomical telescope must be good quality 8-in reflector 80mm reflector or larger with motor drive preferably. Tel: 0704-880027 (after 6pm).

LAFAYETTE HA350 receiver working or not 11 mechanicaly sound. G3KRY, QTHR. Tel: 0953-860524 (Norfolk).

A123, A128, A16, A14 non dealer seeks the above and similar sets for display purposes. Good prices paid for sets in orig condx with access. C4YHP. Tel: 0424-51795.

HAVING RETURNED FROM overseas where transmitting not permitted, requires a rig to contact old friends in 2L land. Anyone wishing to dispose of such a rig please contact 04024-50688 (evenings after 6pm).

HAVE TYPE 3 HK11, mint, and Mod-A HK11. Would swap for German clandestine or military equipment of WW11 vintage. Write Liseok, Rue Maurice Peadra 9, B-1160 Bruxelles, Belgium.

EX WD THERMO COUPLE RF ammeter 0-0.5amp. SALE: Dotong SRB2 Woodpecker blander with psu E40. G3EGC QTHR. Tel: 0204-51502.

MISSED BOAT FOR SECOND TIME. I am wanting a warc mod kit for my F1901. Can anyone help me? If so - C2FNK QTHR - would be very grateful. Postage refunded if purchased. Thanks.

YAESU FV1020M VFO for F1102 transceiver. C4XCS, QTHR. Tel: (Hereford) 0432-77661.

KW2000 ANY MODEL, or similar. Will collect. C3VWV, QTHR. Tel: 0634-376498.

P60 OR SIMILAR 60F1 mast, hf, triband beam, also 4CX350F and 2C39 valves. Oava, C00ZJ, Tel: 0455 282168 (Lincs).

FR10 1S940 OR TS930 with automatic atu, with m/c etc. Oatalla to CW4NZ, QTHR. Tel: 0639-4376.

HAS ANYONE GOT A retired ex-aircraft 360/720 CH R1 EC. Narco 111 or 810 etc. Damaged or non-working no problem, real money for something modern. Tel: 0227-476136 (day), or 0304-373788 (evenings). Jake Adamaon, BR533504.

ES OFFERED FOR CERAMIC VALVE holders; Lissen 5 and 7-pin, Bulgln 5-pin, Hammarlund UX5 and UX6. 01 please note! Also Eddystone brown three-hole mounting. Good price paid for Lissen H1-0 components. C4IMT, QTHR. Tel: 0225-891254.

CODAR CR45 RECEIVER with missing nolls, nen anyone help out. Buy, borrow or details to make. Tel: 056-884418 (Herefordshire) evenings. Will compensate any losses incurred. C080K, QTHR.

HANSEN FS7 POWER METER. Must be unmarked up to E35 pold. C3K1W, QTHR. Tel: 0734-713644.

KWH-2A AND PSU. TM201A. G3XL, QTHR. Tel: 0379-83596.

ATU AT230 OR SIMILAR. Also MC60A min. Both must be in good working order. Cash waiting. G0JJJ. Tel: Stave (Walsall) 0922-640861.

REMOTE VFO-230 digits! all operating nonditions, Inc split-frequency operation, combining 20Hz step digital vfo with 5-mm. Trfo must be in good working order. Tel: Dennis, 0407-830182 (evenings after 7pm). Anglesey, Gwynedd.

ICOM IC275E WILL collect any distance, also for sale, Datong MK morse keyboard, £50. G4JBH, QTHR. Tel: 0935-824225.

AT120, AT130 ATU required or similar small atu.
Tel: (Stallord) 0785-840872.

LOW PASS FILTER. Preferably KW but any good make considered. Also KW monitorscope. Details to G4BLI QTHR, or tel: 0752-401437.

EPROM, BLOWN FOR RSCB Morseman or programming information for same. Tel: 0782-627244, G6LLF, QTHR.

VALVE 812A, GOOD CONDX. Plus details if available. GW3VLU, QTHR.

WW2 GERMAN EX-SERVICE equipment, parts, literature for museum purposes. Not working acceptable. WS Ho1, WS No1, WS 65/66, 1-1190, AG67, S2ERT, 4Q, SG, RC37, H2S modules. Will collect, WHY? Q28RO, Ragnar Otterstad, Vajdammen S, DK-2840 Holte, Tel: 010-452-801875.

BROTHER PRINTER model 1009, Stan, G4VZX, QTHR, Tel: 0942-672657.

MICROWAVE MODULES MHG144V 2m preamp, 6 or 8-elo 2m quad ant, MFJ-16010 atu. Tel: 09952-5590.

2 DR 3-ELE DOOMLESS QUAD for 20/15/10m, condition immaterial. Also linear amp TL922 or Amclitron AL80A or AL1200, others considered but must be valve and in good condx. Good price paid. G0HNZ, QTHR. Tel: Nottingham 842699.

WANTED URGENTLY, INFO ON telelunka 638 OF revr, Q.25MHz-30.0MHz (air or shipborne)? All (or any!) letters answered. Your price paid for circuit/manual. Can possibly help with your problem circuit. John, G8BMLH, QTHR. Tel: 083-82-304.

HELP! HAVE A SUMMERKAMP/Yaesu FLDX-500 tx and FRDX-500 rx but am lost without operator's manual. Expenses plus paid for photocopies, info, CHODLZ, Gilbert, QTHR. Tel: (Largs) 0475-673271.

URGENTLY REQUIRED: ARRL Radio Amateurs' Handbook 1979 or earlier. Also needed Eddystone brown British live and seven pin valve holders - three hole mounting. Have Eddystone six pin coils, ex condx, exchange four pin equivalents. G4IMT, QTHR. Tel: 0225-891254.

FL2100Z LINEAR amp. Must be in very good condx. FT102 in scrap condx for spares. Control Southern England for collection please. Also 811 valves. G8PO, QTHR. Tel: 0329-662900.

FOR AR30 ANTENNA "rotator" unit. The potentiometer RS and wiper kit, part no. 50819-10. Perhaps AR40 part may fit, or HAM4, or possible rewind of pot. SALE: motor/American, 1ma, round 2.75" £2.50. Alan, G3MDL, QTHR. Tel: (Bury-St-Edmunds) 0284-60984.

SERVICES TEXTBOOK of Radio (blue edition) vols: 1,2,4,6. Radiotron Designers Handbook circa 1960. Ham Radio 69-79. Command receivers 1.5-3.0MHz, and 550-1500KHz. Vibroplex morse key. G4BMH, Tel: Kettering 712273.

CW NARROW FILTER for FT77. 4m module for FTV901R. Please phone after 1400h. Keith G0FQJ, QTHR, Convey Island, Essex. Tel: 0268-680638.

GOOD CLEAN COPY of Hans interpreter or source of same. Also 240v generator about 1kva. C4IOF, QTHR. Tel: (Worcester) 0905-351568 (evenings).

YAESU FT7B OR KW2000 series. Peter, G0ESB, QTHR. Tel: (Lichfield) 0543-264586 (after 6pm).

MANUAL OR CIRCUIT and alignment details for Pye Metaphono MF6AM to 4m. Also 70MHz mobiles AM PRET CHEAP for cadet not on 70MHz. G8ALM, QTHR.

INFO ON TX VALVE CV6131, also spare CRT for G31 telequipment scope or faulty scope with good crt. John, G8BMLH, QTHR. Tel: 083-82-304.

JOYSTICK ANTENNA. Advertiser pays carriage. Tel: Godsal, Staffs 6782 (after 7pm).

HAS ANYONE CCT information on Burndopt single channel unit/ fm rig type BE365/0.5 Mk2. Replicas please to Stuart, G3VPS, QTHR. Tel: 0427-611160.

ALTIMETER TYPE 19,20 or WHY? Must be in good working order. Please ring 01-843-2411 Ext 2398 (day), or 0494-727445 (evenings) or write Peter, G8BCG, QTHR.

OC-OC CONVERTER for Yaesu FT1012D. G4ZOP, QTHR. Tel: (Scarborough) 0723-72275.

HELP. Information on disc drive Micropolis 1115N. Also Schematics for Interlacc unit to my Sharp HZ80A. Any communications software and hardware extras would be welcome and paid for. Fred, G8HTP, QTHR. Tel: 092572-8644.

16mm BELL & HOWELL GSAP gun camera (c1na) ex-govt WWII 11cm takes 501t Kodak mags. 24/12v working, any condx. Surplus 501t mags also. Other 16mm cameras and equipment required. G1YST. Tel: (Bath) 0225-706795 (evenings).

ANY PRE 1963 BULLETINS. Also pre 1970 ARRL handbooks or similar. Some valved gear for sale. GW4BZ1, QTHR. Tel: Chester 675794.

AM CRYSTAL FILTER FOR Drake R4C revr, other 4KHz or 8KHz. Chorley, 7 Foxleld, Evorton, Lymington, Hants. Tel: Lymington 45231.

INFORMATION, hardware and software for Tandy TRS-80 computer. G1XUV, QTHR. Tel: (Great Yarmouth) 0493-781883.

YAESU VFO FV107 urgently required. G3LPA, QTHR. Tel: 0536-76033h (after 6pm).

IN MEMORIAM

The Society records with regret the deaths of the following radio amateurs:

I Adlem, G4UGS, May 88
J W Box, RS5533, 18/7/88
R Chambers, GM4MAA
P A Clements, G1SVE
S Cole, G3ZSR (Piper Alpha Rig disaster)
E H Cousins, G4DHM, 17/6/88, aged 75
D H Cunningham, G1WV1, 5/6/88
E W Dearling, RS90083
J Egan, GW4WWE, 5/7/88
L P Fiafin, W3CV, 24/7/88
R H Gale, RS51164, 21/6/88
T E Gander, G3EOF, 24/5/88
F Glynn, G3GVZ, 8/3/88
P Harrison, G4ICN, 14/6/88
H A Hipwood, G2AZH, 9/6/87
A Horner, G3FTS
J L A Hunt, G11TZ, 28/5/88, aged 65
L W Kingsley, RS46046
R Linder, GM6PIN, 22/6/88
J Lyons, G4PRM, 13/6/88
J MacDonald, GM8BFG, April 88
J Martin, G4OOC, 28/7/88
J D Morris, G2DAR
B W Nappey, G3YDI
E I Owen, VK5UK
G W Paton, GM0HFD, 22/6/88
P O Ridgley, G3YGY
P Roughley, G4SKD, 14/10/87
L C Sanders, G1RNS, 30/4/88
D J Sawyers, G4XSO, 29/4/88
E W P Sculthorpe, RS52315, Feb 88
K Sealey, G3GFB
W R Shore, G3SCQ, 26/5/88
N Skinner, G5SN
G Tashara, GW3FWY, July 1988
M Thickett, G0EBM, 22/1/88
J S Thornton, G3FOO
J C Warren, RS54077, July 88
S G Whiteside, G1ODWP, 6/5/88
T C Wright, G4RJV, 14/6/88
R K Willmott, G3BFO, 4/6/88

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RSGB LOTTERY PRIZES

Last month's advertisement for lottery prizes (page 687) listed only one Yaesu product - the FT770RH 70cm fm transceiver, and credited this to ARE Communications instead of SMC Ltd. There's another one - the Yaesu FT23R 2m fm transceiver, in fact donated by ARE Communications Ltd. Apologies to both companies for the mix-up, and to members for leading you to believe that there might have been fewer superb prizes than there actually are!

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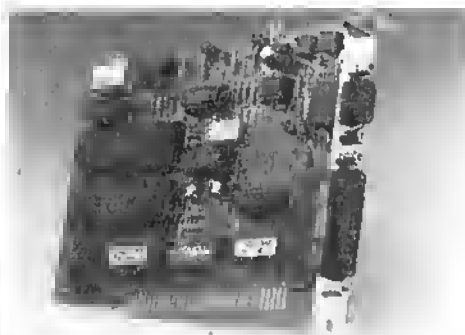
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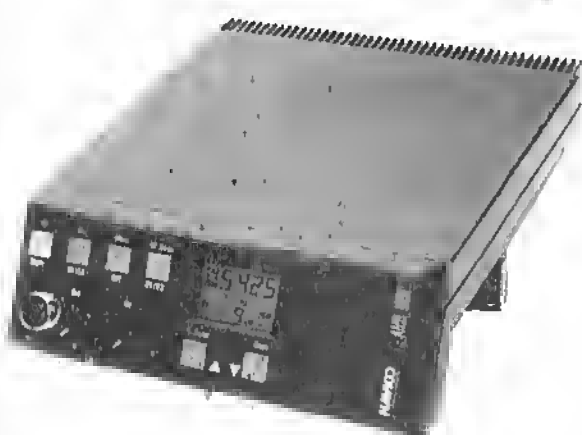
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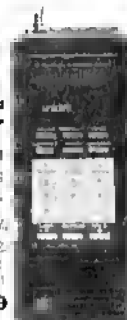
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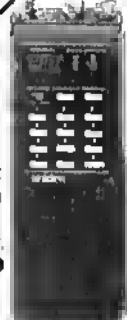
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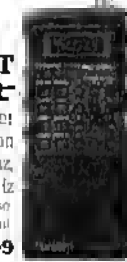
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2N5590	10.90	2SC2075	3.45	2N5590	10.90	2SC2075	3.45	2N5590	10.90
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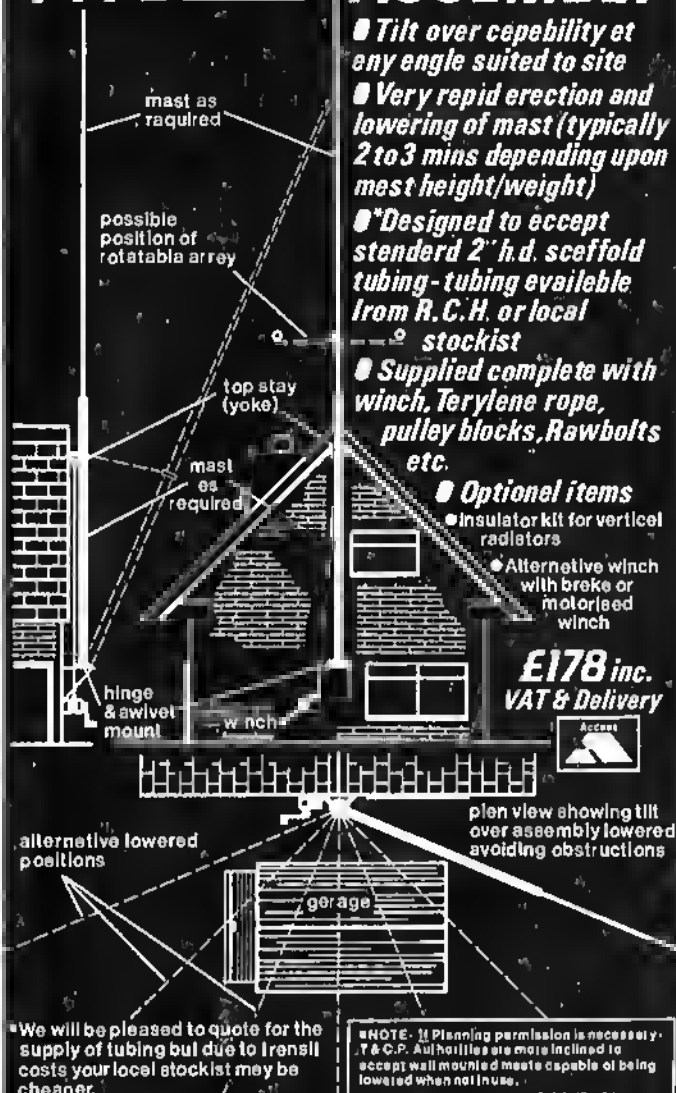
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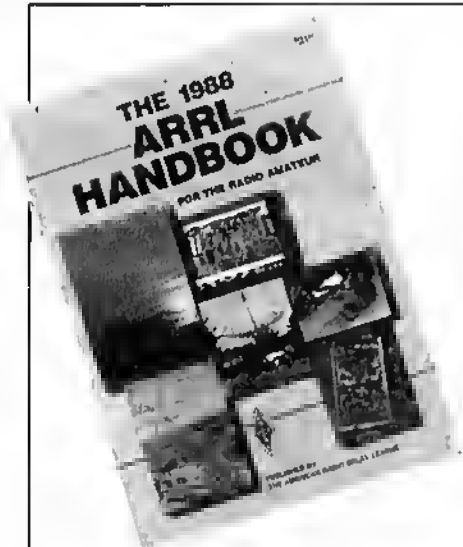
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TO REMAIN ANONYMOUS

I write in answer to part of G4GHG's letter concerning Call Book entries. He may have intimate knowledge of villains by working in HM Prisons, but I can assure him that being on the receiving end of losing all your equipment while

preparing for a charity special event station that raised £1300 does make you wish to hide your identity.

When the DTI moved to Chesterfield, a form was issued which made it very easy to indicate your preference for the entry 'Particulars withheld' in the RSGB Call Book. A subsequent letter from the RSGB asked if persons like myself, who requested anonymity, would reconsider the entry, and I stated that I would not object to the town being entered. I realised that not knowing someone's QTH was a nuisance when it came to beam headings, etc. The result of my reply did not, however, seem to alter my entry, which is still 'Particulars withheld...'. I am sure that there are many other amateurs who feel the same way — that the town alone should be printed.

Come on RSGB, issue a reply form in RadCom so that alterations like this can be made.

Bob Hewitt G4MHJ

The Society remains in negotiation with the DTI on the issue of what can be printed in the Call Book. Quite recently the DTI said that they would be prepared to give out the postal town for licensees so that, at least, this could be printed in future editions of the Call Book. We will gladly report on this possibility as soon as more concrete information comes to hand.

THANKS FOR THE SUPPORT

May I, through your Last Word column, warmly thank all who came to the recent RNARS Rally for making the day a huge success, but at the same time express our regret for delays and inconveniences caused to our visitors. The organisers feel that an explanation is due.

For 27 years the rally has been held on the sports field at HMS Mercury, and the same field has always been used as the main visitors' car park. The day before the rally we were informed by the Naval authorities that, in view of expected rain, we would not be permitted to park cars on the sports field for fear of damaging it. We were to use the upper field for public parking. We had no choice but to comply, which gave us one day in which to revise many carefully-laid plans. The consequences of this late change were that the new approach roads were rather narrow for the number of cars (which began to arrive at 8.15am), programme information was rendered inaccurate, hastily calculated parking lanes were too narrow for easy manoeuvring (though by no means impossible) and visitors had a longer walk from the car park to the main rally. The most regrettable consequence, however, was that admission arrangements for our disabled visitors was less than satisfactory and for this we apologise unreservedly. Fortunately, most appreciated that we were doing our best under very difficult circumstances.

In spite of these snags, most visitors displayed friendly, courteous, patience and we have since received many heartening messages of thanks and congratulations for which we are most grateful. We have learnt from this experience and will be ready for a

repeat next year. In the meantime I would value any constructive criticisms or remarks by post, phone, on air or via packet, at G4CKM.

Cliff Harper G4UJR (QTH), RNARS Rally Organiser

LONG LIVE TECHNICAL TOPICS

In response to a query in May's letters pages, I can confirm that people do build RadCom circuits because they know that they are checked well. I have built several circuits successfully. The 30-watt ssb transceiver for 1.8MHz was a success, and G3TSO — the designer — was very helpful and particularly pleased to see that he had won a trophy.

I also built the RC14, and not from a kit; it has proven to be good for demonstrating to young people the art of constructing receivers.

From comments I hear locally, on the air, amateurs look forward to the technical items appearing, and we always find Technical Topics useful too.

Please encourage Mike, G3TSO, to submit more designs (your wish is granted already — see page 771 — Ed!). And readers, have a crack at constructing HAT's top bend rig, without sanding for the kit. It's much more satisfying making the board yourself.

Ron Roberts G3TAR

I've just been clearing junk from the loft, and came across an April 1963 issue of the Bulletin as RadCom was known in those days. It was good to see that Pat Hawker had just completed his first five years of 'Technical Topics' — personally I hope he goes on for another 100 years!

It was an interesting reminiscence. Preparation was in hand for the Society's 50th anniversary, and a questionnaire was sent out to individual members asking now they would like to see the Jubilee celebrations arranged. On top of that, everyone was invited to attend a 'nosh-up' at the Connaught Rooms. At that time, RSGB annual membership was just 35/- (£1.75) while associates got away with 15/- — end, dare I say it — Practical Wireless cost you just 10p!

Dealers' adverts took up 20% of the magazine's pages, compared with the 40% of today, and there were more constructional articles too, probably because there were more constructors! The oddest difference was in reader's adverts, because in April 1963 just 20 individuals wanted to part with their hard-earned goods, compared with 96 in my latest RadCom. I guess amateur radio really is becoming a rich man's hobby.

I note that the mobile column printed an article on a zener diode pa, sent in as a leg-pull. I believe that there were many red faces in the editorial office as half the membership tried to build it and make it work (and that was before the multiple incidence RAE too!).

Nev Kirk G3JDK

I too remember that period — albeit a little vaguely now — having just started work in the editorial office as a lowly assistant for £7.10s! I also recollect a few

chuckles over a zener diode pa, but was convinced it had some connection with the author of Technical Topics at the time...

CAUTION BEFORE CONDEMNING SLURRED SPEECH, PLEASE

I am willing as Chairman of the Radio Amateur Invalid and Blind Club to acquaint readers with the fact that many types of disability represented amongst our members create severe speech problems — overcome so well by most sufferers. Such disabilities as multiple sclerosis, Parkinson's disease, cerebral palsy and strokes, to name just a few, can result in the amateur sounding slurred, and possibly difficult to read. Amateur radio means so much to RAIBC members, and in many instances it becomes their main activity in life. I would be grateful if as much encouragement as possible be given to such amateurs when they are heard on the bands, coupled with an understanding that their speech may not altogether be clear, rather than making derogatory remarks. These can seriously discourage such amateurs from enjoying their hobby. RAIBC acknowledges the tremendous help given to the Club and its members, which actually makes it possible for so many of the members to enjoy the hobby.

Angus McKenzie G3OSS

NUMBER PLATES

As another little bit of information on the saga of call sign number plates, I note that the June/July issue of 'Call Numbers' mentions that the Licensing Authority is currently considering issuing number plates with single-digit marks. The stumbling block, they say, is the method by which they can sell these marks to the public. Maybe, if this goes through, it will facilitate the issue of G-series call sign plates this time next year.

Mark Rogers G4RGB

AN EXTREME EMC CASE

I write regarding Mr V. Reynolds' (G4MVR) sad letter in August RadCom. I extend my sympathy to him, and offer my own tale of woe lest this mitigate his annoyance.

After 15 years operating from my current address, a new neighbour arrived in 1986. Trouble erupted almost immediately. He told me to stop operating, "Or else."

Over a period of two years, despite the efforts of the DTI and myself, he threatened myself and my elderly father with violence, threw stones at me and at our windows, erected 35 feet of scaffolding to smash against my ladder (removed several months later under a council enforcement order), used his vehicles to obstruct our driveway (police removed them), telephoned my work attempting to slander me, and in full view scratched my car causing £300-worth of damage! Insufficient evidence prevented the police from acting.

Finally he enlisted the support of four other neighbours; I observed him with a clipboard half a mile away!

R.F. BYRNE COPS OUT!

... Continued ...



Maybe forms of propagation would be brought up too!



... word ...

the last ...

In October 1987 I obtained a county court injunction ordering him not to threaten, harass, interfere with or assault me. Despite this, a month later, he continued his campaign. He told others that he would stop me, killing me if necessary. Over a period of time he made several threats to my life.

I wrote to the Thames Valley Police, complaining about his behaviour, and received very personal attention from a Police Inspector who wanted to be kept informed of all events.

Finally, in March 1988, I returned to the County Court. An application for his commitment to prison was issued for contempt of court.

By the time of the hearing, he had decided to move, and I agreed on my barrister's advice, to suspend my action provided he paid my legal fees, amounting to £1300. Maybe he learned a lesson.

What is particularly interesting is a list of affidavits with statements now residing in my 2" thick file. They read:

'He doesn't affect me, but I dislike the antenna.'

'BT suggested moving our phone line, but we refused.'

'It used to affect our old hi-fi, but the new one is OK.'

'Since getting a more powerful phone the problem has stopped.'

'He goes through my hearing aid when I'm in the kitchen.'

'I'm sure he adds bits to that antenna during the night.'

'We cannot use our cordless radiophone because BT has told us that he could eavesdrop on us. Our phone should be private – that's unfair.'

My barrister informed me, incidentally, that any action a neighbour choosing to make 'for nuisance' is likely to be unsuccessful, and showed me a copy of a case, heard by a well-respected judge some years ago, who commented that any cable or radiator, emitting energy lawfully cannot, in law, be a nuisance because it had never been proved to be harmful, either financially or physically, nor is it in any way noxious.

I battled against this form of terrorism for a couple of years and I won. But it requires iron nerves, and an indomitable will, to exercise one's democratic rights, remembering that we all have to obey the rule of law, at all times, and people will do well to remember this.

Des Taylor G4QBB

The letter from G4MVR in your August issue described a problem with which many of us can sympathise. Clearly there is a lot of work to be done to improve the design of entertainment electronic equipment, but in the meantime a softly-softly approach can sometimes work.

I live in a village where the close proximity of neighbours and a nominal 'conservation area' status means that masts and aerials are a potential source of problems of the type described by G4MVR. I wanted to erect an 80m G5RV dipole and this I have done in stages without (I stress) any prior discussion with neighbours, since I believe that this

is an open invitation to look for interference problems.

First stage was to erect a 20ft aluminium pole at the bottom of the garden and leave it unrigged for three months. When this appeared to be accepted I put up a 20m dipole using 26-gauge wire and nylon lashing line. Obviously this came down in the first high wind, but then I rigged my 80m G5RV antenna and not a peep of protest was heard from anyone. Enquiries are answered by saying that I need a special aerial – with no mention of amateur radio.

It may not always work but it's worth a try.

E. Kret G4FTP

NEW KEY

I would be very pleased if you could drop a note into RedCom to let members know that I gave birth to a son named Thomas Ackley Morgan on 6 July this year. He becomes a grandson for Peter Matthews G3BPM, and great grandson of the late John Claricoats G6CL. Given this background, he can hardly fail to become an amateur himself! I wonder how many other families have three generations of amateurs? I got my licence at 16, having been brought up surrounded by 'hems'. It is unfortunate that my grandfather was no longer alive, as he would have been thrilled to see amateur radio carry on through the rest of the family.

Hilary Morgan

REMEMBER THOSE WE LEAVE

It has to be said that, sooner or later, each of us will become a silent key. Those we leave behind, either in life or death, will be missed eventually with deepening sorrow.

Whereas the normal 'stuff of life' appears capable of straightforward resolution, what about amateur radio gear? Most people have little knowledge of its function or value. What are our survivors to do? How can they avoid parting with equipment at well below its worth?

I would urge all amateurs to ensure that their families or executors are furnished with adequate information about disposal and value of their station. If a piece of equipment is to be left to somebody, then put it in a will. This can even include formally leaving items to your spouse so that they can realise the value. If the equipment is to be sold after your death (as most is), then make sure that the executors of the estate know how to make the offer of sale and how much to ask. If necessary, nominate a trusted fellow amateur to regulate the disposal. If other 'hems' are to have their pick, then say who the others are. We have heard of the 'great friend' who calls round after a bereavement who afterwards turns out merely to be an opportunist. Avoid this happening. Nominate someone to attend to the 'junk box'. You can have it sold or given away. Say which, if given away, to whom? How about antennas? Who will attend to taking them down should they become a hazard? We owe it to those we leave behind, who will be unhappy enough, not to leave them with further distress.

I wonder if any solicitors in the readership might have further ideas on this matter? So much of what happens after a hem's death appears to be haphazard. I believe that, by taking action now, each of us can help our survivors avoid pitfalls.

John Hardwick GM4ALA

POWER CRAZED

Having just had to endure the key clicks from a high-powered European station all over the bottom 50kHz of the 14MHz band, I am appalled to read that the society is asking the DTI to allow 'an increase in overall power limits from 26dBW to 30dBW'. Just because 'many other countries have higher power limits does not mean it is a good thing to "remain competitive".'

This proposal can only lead to a further polarisation of our hobby between the big-money stations – not necessarily accompanied by sufficient intelligence to use the equipment properly – and the rest, to whom amateur radio is still a hobby. It will only reinforce the impression among newcomers that you need lots of money to be a radio amateur.

The RSGB would be better advised to concentrate its efforts into finding ways of putting the fun back into amateur radio (as it was when I was licensed 30 years ago).

Tom Harrison GM3NHOPS – and don't give us any more cartoons like that on page 644 – especially the last frame!

We are sure you – though not everyone of course – will be glad to learn that the DTI did not agree to increase UK power levels in its most recent review. The UK levels are low by reference to most other countries, however, and many amateurs will justly seek equality. Furthermore, and this is probably the most pertinent point, the RSGB as a representative organisation performed its duty in asking for higher power limits because a very significant number of members submitted letters asking for this to be reviewed by the DTI. – Ed

THE CARTOONS – AN EMOTIVE ISSUE

I feel your cartoons are of immense distaste. The one bottom right alluding to Norman (G3★) who became a silent key last Saturday week is particularly painful to his friends, myself included.

Where is the spirit of amateur radio today? I think you should apologise for the hurt you have caused; it undermines the other good work you do.

Prof. Winston Ingram, D.Mus. LMPA, G4PEF

I speak as a member of the RSGB since 1935, including the war years. I refer to what I assume you mean to be a cartoon, bottom right-hand corner of unnumbered page 644.

This is not only disgusting in so much it shows a man giving an obscene gesture; but the wording refers to one of our members (G5★), now silent key some days ago, and an episode and a verbal

attack made on him on 3694kHz some live or six weeks ago.

Please do not let us have any more of this sort of thing in what, I have until now, taken to be a learned society; it disgusts me, and will cause the loss of another member – me.

R Benham-Holmes G2DYM

Cartoons, which reflect the lighter side of life – and in many instances can be a light-hearted observation upon more serious matters – if properly conceived have a relevance within any consumer or hobbyist circle. No apology is, I feel, due for including a cartoon strip within RedCom – there is without any doubt a vast proportion of the RSGB's membership, and hence RedCom's readership, which will appreciate a little light relief from thousands of words of pure information. I personally would argue that the RSGB is not a learned society 'in the accepted sense', but I fully appreciate that it has a strong contingent of learned members who act in accord for the benefit of all radio amateurs. RedCom, although the journal of the Radio Society of Great Britain, has a duty to address all members, and by no means all them revolve in the same circles as the RSGB's learned membership and leadership. It cannot accomplish this if it adopts a wholly formal 'Journal' image. There are many young, intelligent members and potential readers who recoil from a starchy publication.

It is my aim to broaden the style of RedCom to reach a wider proportion of readers; it must become more readable, but at the same time of course retain (even improve) its technical integrity. Presentation is an important consideration, and the forthcoming appointment of a professional designer will assist here. The cartoon strip produced by G6MEN is self-censored, but it adopts this stance in order to (quote G6MEN) 'temper the many follies of radio amateurs' (including his own, he recognises and confesses) 'quite mercilessly'. To complain openly and specifically about some of the 'follies' would be incredibly boring. Clearly some people will be amused, and some will not. It will be most unfortunate, however, if mass resignations occur over what I sincerely believe to be a remarkably trivial issue.

Suggested allusion to a specific person, especially a silent key, is alarming and in my most distasteful. I offer a pure and sincere apology to anyone who will have assumed any real connection. I have, however, absolutely no evidence this was anything other than pure coincidence. Maybe in future issues we should take the film industry's disclaimer, 'Any resemblance to person living or dead is purely coincidental.' I will strive to ensure that this is completely unnecessary.

The final panel in the first cartoon is the lowest ebb to which the series will have ebbed. There are some good ones ahead. I hope you all – or probably at best most of you – will agree. – Ed

.....word



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- Built-in automatic antenna tuner
- SSB, CW, FM, AM, RTTY
- 160-10M/general coverage receiver

The ICOM IC-761 has many features included in a single unit and operates on all the HF bands with general coverage reception from 100kHz to 30MHz. A 105dB dynamic range receiver, high RF sensitivity and steep skirted IF selectivity makes the IC-761 ideal for Dx'ing, contesting and shortwave listening.

Additional features include 32 fully tunable memories, variable RF output power to 100 watts, passband tuning and IF shift plus tunable IF notch, RF speech processor, noise blanker, RF pre-amp and 20dB attenuator.

- Direct keyboard entry
- Passband tuning plus IF shift
- QSK up to 60 wpm
- CI-V communications interface

Direct frequency entry is via the front panel keypad or by the main smooth action tuning knob. For the CW operator a built-in electronic keyer, semi or full break-in operation up to 60 wpm is possible.

Accessories to complement this exciting new transceiver include the SM10 graphic equalised microphone, SP20 external loudspeaker with selectable filters, EX310 voice synthesizer and HP2 headphones.

For more information on the IC-761 and other ICOM Amateur equipment contact your nearest authorised ICOM dealer or phone us direct.

Icom (UK) Ltd.

Dept RC, Sea Street, Herne Bay, Kent CT6 8LD. Tel: 0227 363859. 24 Hour.

Helpline: Telephone us free-of-charge on 0800 521145, Mon-Fri 09.00-13.00 and 14.00-17.30. This service is strictly for obtaining information about or ordering Icom equipment. We regret this cannot be used by dealers or for repair enquiries and parts orders, thank you.

Datapost: Despatch on same day whenever possible.

Access & Barclaycard: Telephone orders taken by our mail order dept, instant credit & interest-free H.P.



"They said I couldn't work DX with just 100 watts. Especially with a radio that has less than 1000 switches on the front panel.

But the truth is, I'm working lots of DX, more than some of these blockbuster types, thanks to my Yaesu FT-747GX.

You see, my no-nonsense FT-747GX was designed with me in mind, so I can hop around the band fast to nail those DX stations. While the other hams are warming up their amplifiers, I'm working the new country!

My FT-747GX has a super receiver, with a directly-driven mixer for great overload protection. And, Yaesu included the CW filter in the purchase price

(I used the money I saved on postage for the QSL cards!).

And my FT-747GX is loaded with other features. The receiver works from 100kHz straight through 30MHz, and it's a fantastic shortwave broadcast receiver. I can use all twenty memories for that alone! Plus it's got dual VFOs. A noise blanker. Split frequency operation for the pile-ups. And scanning up the band helps me check out openings as they happen.

I just put in the optional crystal oven, and next month I'm going to pick up the FM board.

And with the money I saved when I bought my FT-747GX, I got a second ten-metre antenna for satellite work on the high end of the band. I use my personal

computer to tell me what satellites are going by, and the computer even sets the frequencies on the radio for me.

Now my friends are getting FT-747GX rigs, too. I knew they'd figure out my secret weapon sooner or later. But now I'm setting the pace!

Thanks, Yaesu. You've made a rig that makes sense, at a price I can afford."

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UK Sole Distributor

YAESU

"They laughed when they saw my radio. Then they saw my logbook."

